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Preoccupation in Body Dysmorphic Disorder:

Cognitive Processes and Metacognition

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OVERVIEW

The literature review comprises discussion of 4 principal domains. First, literature pertaining to diagnostic criteria, clinical features, historical context, prevalence, co-morbidity, aetiology and intervention for BDD is reviewed. Second, research on cognitive processes and metacognition (beliefs about experiencing particular thoughts and mental strategies employed to control particular thoughts) in other disorders is discussed, followed by critical appraisal of the minimal existing research on thought content and metacognition in BDD. Possible lines of future research are suggested.

The empirical paper describes the aim of the current study, namely exploring preoccupation in BDD, by investigating the content of thoughts about appearance and metacognition in people with BDD and people with 'normal concerns' regarding appearance. A structured interview and questionnaires were employed to investigate these aspects of preoccupation in BDD, followed by quantitative analyses and coding of descriptive data. The content of the thoughts was found to be similar in the 2 groups, but participants with BDD were found to endorse negative metacognitive beliefs significantly more strongly, to employ thought control strategies involving punishment significantly more frequently and to report significantly lower effectiveness of the 2 most frequently employed strategies. These findings are related to existing literature, and clinical and theoretical implications and limitations are discussed.

The critical appraisal expands upon the discussion of these findings, exploring strengths

and weaknesses and professional, theoretical and clinical implications further. Future directions for research in this area are proposed and both the researcher's expectations and the research process are reflected upon.

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PART I

LITERATURE REVIEW

ABSTRACT

In this literature review, research relevant to thought content and metacognitive aspects (beliefs about experiencing particular thoughts and mental strategies employed in an attempt to control particular thoughts) of preoccupation in Body Dysmorphic Disorder (BDD) is discussed. First, existing literature pertaining to the diagnostic criteria, clinical features, historical context, prevalence, associated co-morbidity, aetiology and interventions for BDD is examined. Next, research on cognitive processes and metacognition in other disorders is explored, focussing particularly on thought content, metacognitive beliefs and thought control strategies in non-clinical participants, people with Obsessive Compulsive Disorder (OCD), people with Generalised Anxiety Disorder (GAD) and people with depression. The very limited existing literature on thought content and metacognition in BDD is reviewed, after which possible future areas of research are suggested.

1) Body Dysmorphic Disorder (BDD)

1.1) Diagnostic Criteria and Clinical Features

BDD is defined in the DSM-IV as a 'preoccupation with an imagined defect in appearance. If a slight physical anomaly is present, the person's concern is markedly excessive'. In order to fulfil diagnostic criteria, the preoccupation must be associated with 'clinically significant distress or impairment in social, occupational, or other important areas of functioning' and should not be 'better accounted for by another mental disorder' (American Psychiatric Association, APA, 1994).

The preoccupation is usually focussed on specific concerns, such as facial features or hair (Phillips, 1991). Phillips and Diaz (1997) found that skin was the most common area of concern for both males and females with BDD, followed by hair and then nose. Both Cororve and Gleaves (2001) and Veale (2004) note that the majority of people with BDD have multiple concerns simultaneously, while Phillips, McElroy, Keck, Pope and Hudson (1993) state that BDD sufferers have a lifetime average of 4 preoccupations.

Veale et al. (1996), in a study on beliefs and assumptions regarding appearance, hypothesised that the excessive preoccupation with appearance in BDD is coupled with the belief that the imagined defect reveals personal inadequacy. They cite being unlovable as an example of such inadequacy. Furthermore, Veale (2004) notes that

extreme importance is attached to the idea of appearance as a self-defining characteristic.

Veale (2004) describes several of the clinical characteristics of BDD, including prolonged gazing in mirrors, comparing one's appearance to that of others, camouflaging the perceived defect (with make-up, for example), picking the skin, seeking reassurance from others and avoidance of social situations and intimacy. In 1 study, 80 percent of participants with BDD reported gazing into mirrors (Veale and Riley, 2001). Phillips, Hollander, Rasmussen, Aronowitz, DeCaria and Goodman (1997) found evidence to suggest that more than 90 percent of BDD sufferers engage in compulsive behaviours aiming to examine, improve, or hide the perceived defect.

With regard to quality of life, the shame and secrecy that often surround BDD are associated with social isolation and poor quality of life for many sufferers (Phillips et al., 1993). Cororve and Gleaves (2001) summarise a number of research studies and conclude that BDD is frequently associated with low self-esteem, depression, anxiety and self-consciousness. Phillips (2000) found, with regard to mental health related quality of life, that BDD sufferers' mean scores were lower than means for the general US population and people with depression, diabetes or a recent myocardial infarction. Findings from this study suggest that people with BDD suffer from high distress and poor mental health related quality of life. Fear of rejection and self-consciousness can become so extreme that some individuals struggle to leave the home at all and Phillips et al. (1993) found that up to 30 percent of individuals with BDD are housebound. The

prevalence of suicide attempts in people with BDD is said to range from 24 percent to 29 percent (Phillips, McElroy, Hudson and Pope, 1995). Veale et al. (1996), for example, found that 24 percent of a sample of 50 people with BDD had attempted suicide.

1.2) Historical context

Phillips et al. (1993) mention BDD's 'century-long description in the literature' and Neziroglu and Yaryura-Tobias (1993) cite a description of dysmorphic concern written by Morselli as early as 1886; 'a subjective feeling of ugliness or physical defect which the subject feels is noticeable to others, although his appearance is within normal limits'. Morselli coined the term 'dysmorphophobia' to refer to this extreme fear of ugliness and the corresponding diagnostic category was first introduced under atypical somatoform disorders in the DSM-III in 1980 (American Psychiatric Association, APA, 1980).

The specificity of the diagnostic criteria in DSM-III has been drawn into question by a number of authors. Furthermore, numerous authors point out the problematic and confusing nature of the term 'dysmorphophobia'. Munro and Stewart (1991), for example, remark that the 'nomenclature is chaotic' and cite 6 contradictory uses in the literature. Newell and Shrubb (1994) find the term misleading, as there is no actual fear of physical abnormality and the abnormalities of others are usually tolerated without difficulty. In 1987, BDD was given independent diagnostic status in the DSM-III-R (American Psychiatric Association, APA, 1987) as a disorder of irrational conviction,

rather than a phobia (see Cororve and Gleaves, 2001).

As described above, the DSM-IV (American Psychiatric Association, APA, 1994) classifies BDD as a somatoform disorder, but it should be noted that patients with BDD symptoms can be diagnosed with BDD, delusional disorder - somatic subtype or both. This double-coding allows for acknowledgement of the delusional nature of the preoccupations of a proportion of people with BDD, but Cororve and Gleaves (2001) point out that such a classification is potentially problematic. They question both the appropriateness of listing BDD as a somatoform disorder and also the difficulty of defining a delusion. Phillips (2004) finds the DSM-IV inconsistent with regard to the classification of both BDD and other disorders with psychotic features. It is of interest that Phillips, McElroy, Keck, Hudson and Pope (1994) found no difference between people with delusional preoccupations and those with non-delusional preoccupations in terms of demographics, phenomenology, course, co-morbidity, family history or treatment response to serotonin reuptake inhibitors. Higher symptomatology and greater impairment of functioning were noted in the delusional group, however, suggesting perhaps that delusional preoccupations are indicative of a more severe form of BDD.

Phillips (2004) proceeds to suggest a dimensional classification of BDD, whereby preoccupation varies with regard to level of insight. This would seem to fit with evidence that the preoccupations of many sufferers may shift over time between delusion and so-called 'overvalued idea' (Phillips et al., 1993). Phillips (2004) also suggests the addition of an optional 'with poor insight' specifier for BDD, as has been

added to the diagnostic description of Obsessive Compulsive Disorder (OCD) in DSM-IV (American Psychiatric Association, APA, 1994). She also emphasises the likelihood of many psychiatric disorders spanning delusional and non-delusional thinking.

1.3) Prevalence

Estimates of the prevalence of BDD vary. Otto, Wilhelm, Cohen and Harlow (2001) suggest a prevalence of 0.7 percent in the general population. Altamura, Paluello, Mundo, Medda and Mannu (2001) found BDD in more than 6 percent of male and female cosmetic surgery applicants and Sarwer, Wadden, Pertschuck and Whitaker (1997) found a similar prevalence in female cosmetic surgery patients (7 percent). Phillips and Dufresne (2000) describe a study in which 11.9 percent of 268 people presenting for dermatological treatment met diagnostic criteria for BDD.

Studies reporting gender differences in the prevalence of BDD are somewhat contradictory. Hollander, Cohen and Simeon (1993) found a higher prevalence of BDD in men than in women, but the small size of their sample makes these findings somewhat questionable. Rosen, Reiter and Orosan (1995) cite evidence of higher prevalence of BDD in females, while Phillips and Diaz (1997) found equal rates of BDD across the genders.

Oosthuizen, Lambert and Castle (1998) emphasise that any statements regarding prevalence should be considered speculative at this stage. Phillips and Diaz (1997) posit

that the aforementioned differences in prevalence estimates may be due to referral bias, inclusion and exclusion criteria and reported severity of illness. Other authors suggest that the shame and secrecy surrounding BDD result in under-diagnosis in the general population (Neziroglu and Yaryura-Tobias, 1997). Veale et al. (1996) state that people with BDD are particularly difficult to engage and therefore assess, and suggest that prevalence rates might represent underestimates.

A number of authors refer to the difficulty in distinguishing between pathological and normal concerns in body image disorders, commenting that the unclear boundary may be a potential contributor to the variation in prevalence rates (e.g. Grant and Cash, 1995). Altamura et al. (2001), for example, refer to 'sub-clinical BDD' and Fitts, Gibson, Redding and Deiter (1989) found that 70 percent of students were dissatisfied with some aspect of their appearance. Forty percent of the same sample reported being preoccupied with that feature. Phillips (1991) remarks that the boundary between BDD and normal concerns regarding appearance may be particularly indistinct, because some level of concern with appearance is 'nearly universal'. She adds, however, that 'there is clearly a group of people who are excessively preoccupied, severely distressed, and often substantially impaired by their concern about a minimal or non-existent deformity'. On a related note, Phillips and Diaz (1997) conclude that, while very mild BDD may be closely related to normal appearance concerns, more severe BDD would seem to be qualitatively distinct.

Further investigation is required to establish more reliable prevalence estimates and the

boundaries between normal concerns regarding appearance and BDD. The inconsistencies evident in the existing literature render this line of enquiry highly challenging, however.

1.4) Comorbidity and Associated Disorders

Perugi et al. (1997) remark that, 'where BDD is the primary presenting problem, it is almost never found without co-morbidity. Gunstad and Phillips (2003) conclude that most people with BDD have at least 1 co-morbid disorder and a mean of 2 lifetime co-morbid disorders. Veale (2004), Cororve and Gleaves (2001) and Gunstad and Phillips (2003) cite numerous studies evidencing co-morbidity with depression, social phobia, OCD, substance abuse and personality disorders. Findings regarding co-morbidity have been referred to by numerous authors in debate regarding the conceptualisation and categorisation of BDD.

Phillips et al. (1995) state that depression is the disorder most often co-morbid with BDD and Gunstad and Phillips (2003) found that 80 percent of people with BDD also met criteria for major depression. Furthermore, an article on the prevalence of BDD in atypical depression found that 13.8 percent of 80 people with atypical depression also had BDD (Phillips, Nierenberg, Brendal and Fava, 1996). Certain authors use such evidence to support the hypothesis that BDD might be best categorised as a form of affective spectrum disorder (see Phillips, Kim and Hudson, 1995).

Cororve and Gleaves (2001) report that lifetime rates of OCD in BDD range from 8 percent to 37 percent. Phillips et al. (1995) cite numerous similarities between BDD preoccupations and OCD obsessions, but note that BDD has higher co-morbidity with major depression and social phobia. Oosthuizen et al. (1998) describe similarities between BDD and OCD in terms of symptoms and treatment response to argue for the conceptualisation of BDD as an obsessive-compulsive spectrum disorder. Bienvenu et al. (2000) state that, 'certain somatoform disorders (especially BDD) are transmitted in families of patients with OCD' and conclude that BDD must therefore belong to the OCD spectrum. Rauch et al. (2003) studied regional brain volumes in BDD using magnetic resonance imaging technology. They found that people with BDD exhibited significant asymmetry in the caudate nucleus, compared to healthy controls. Such an abnormality bears resemblance to striatal asymmetries found in people with OCD. Reduced hippocampal volumes often found in people with affective disorders were not exhibited by people with BDD. The authors concluded, therefore, that the results provide additional support for the conceptualisation of BDD as an obsessive-compulsive spectrum disorder. Phillips et al. (1995) posit, however, that BDD might be narrowly conceptualised as an obsessive-compulsive spectrum disorder and more broadly as an affective spectrum disorder. The hypothesised affective spectrum would encompass the obsessive-compulsive spectrum. They also raise the possibility that BDD might be heterogeneous rather than homogeneous and that it is possible therefore that certain forms of BDD relate more closely to OCD while other forms resemble other disorders more closely.

Gunstad and Phillips (2003) note the difficulties in differentiating between primary social phobia and social anxiety secondary to BDD. They report lifetime rates of co-morbidity of BDD with social phobia to be 38 percent and note that the onset of social phobia usually precedes that of BDD. Hollander and Arnowitz (1999) state that BDD is the fourth most common co-morbid disorder with social anxiety and add that the majority of people with BDD engage in some form of social avoidance. Furthermore, Wilhelm, Otto, Zucker and Pollack (1997) found that in 165 people with anxiety disorders (social phobia, panic, OCD and generalised anxiety disorder), almost 7 percent met criteria for BDD, with co-morbidity rates being highest in those people with social phobia.

Personality disorders have also been found to be co-morbid with BDD. Cohen, Kingston, Bell, Kwon, Aronowitz and Hollander (2000) report that people with BDD have a mean of 2.53 personality disorders, with 87 percent having at least 1. Veale et al. (1996) found that 72 percent of their sample had 1 personality disorder, 48 percent had 2 personality disorders and 26 percent met criteria for 3 personality disorders. Gunstad and Phillips (2003) reviewed a number of studies and found rates ranging from 57 to 100 percent, with avoidant personality disorder being the most common.

One study found that 39 percent of 41 people with anorexia nervosa met diagnostic criteria for BDD, but the possibility of selection bias in this sample was noted (Grant, Kim and Eckert, 2002). Cororve and Gleaves (2001) explore the notion of BDD and eating disorders as variants of Body Image Disorder. Body image according to Cash

and Pruzinsky (2002) is a two-dimensional construct, incorporating both valence (the importance of one's body image to self-esteem) and value (the level of satisfaction or dissatisfaction with one's body). Cororve and Gleaves (2001) argue that BDD is closer to eating disorders than to OCD in terms of primary features, but they also note a number of differences including gender prevalence rates. They hypothesise that both BDD and eating disorders could be related to OCD, for obsessive-compulsive features are common to both disorders.

It is evident that further research is required on the classification of BDD and its relationship to other disorders.

1.5) Aetiology and cognitive-behavioural models of BDD

Phillips (1991) comments on a range of theories regarding the etiology of BDD. She describes theories ranging from the conceptualisation of BDD as a defence mechanism to hypotheses regarding neurotransmitter dysfunction. Cororve and Gleaves (2001) note that cognitive-behavioural models of BDD have received most attention and empirical support.

Rosen et al. (1995) developed a cognitive-behavioural model of BDD, positing that appearance preoccupations begin in adolescence with heightened attention from others to bodily changes. Stressful experiences such as bullying may augment the risk of developing BDD. Biby (1998) notes that the onset of BDD is likely to be in

adolescence, when concerns regarding physical and social development peak. Rosen et al. (1995) state that these adolescent experiences, 'trigger dysfunctional assumptions regarding the normality of appearance, which in turn have implications for personality, self-worth and acceptance'. They proceed to hypothesise that the rehearsing of negative self-statements regarding appearance might lead to such criticisms becoming automatic and entrenched in the person's belief system, that avoidance might prevent habituation to one's own appearance, and that compulsive behaviours only serve to increase longer-term anxiety.

Veale et al. (1996) list a number of cognitive and behavioural components of BDD; higher aesthetic sensitivity with regard to perception of body image, demand for perfection and symmetry in appearance, self-focussed selective attention, affective and physiological symptoms, excessive checking behaviour and avoidance. They suggest that core beliefs regarding rejection and the importance of appearance develop from biological predisposition, early childhood experiences and cultural factors. Selective attention to the perceived defect coupled with a heightened awareness of body image and bodily imperfections leads to hypervigilance for minor physical changes. It is hypothesised that the discrepancy between perceived body image and the perfection demanded results in negative affect. The discrepancy is magnified by beliefs about the importance of appearance, and biased interpretations of incoming information ensue. The heightened focus on a distorted internal body image leads to assumptions that others hold a similar view of that person's appearance, which in turn result in avoidance and camouflage. These behaviours serve to reinforce the dysfunctional beliefs and selective

attention.

Veale (2004) elaborates this cognitive-behavioural model further, hypothesising that people with BDD view themselves as aesthetic objects, rather like people with social phobia are said to regard themselves as social objects. He posits that a trigger (the sight of oneself in a mirror, for example) activates a distorted internal body image. Excessive self-focussed attention increases awareness and distortion of the image, and when combined with existing values, beliefs and rules regarding the importance of appearance contributes to negative appraisal of the distorted image. The negative appraisal increases the self-focussed attention on the image and also leads to mood changes, safety behaviours and rumination, all of which serve to increase the self-focussed attention and negative appraisal of the image.

Limited research has been conducted on mood changes in BDD. Veale (2004) states that internal shame, disgust, external shame, anticipatory social anxiety, depression and hopelessness are just some of the affective states associated with BDD. Phillips, Siniscalchi and McElroy (2004) found that people with BDD had higher scores than other psychiatric patients on measures of depression, anxiety and anger/hostility.

In terms of safety behaviours, camouflage, avoidance and mirror-gazing are often mentioned in the literature. Veale and Riley (2001) found that 80 percent of people with BDD mirror-gaze and are motivated to do so by the hope of looking different, the desire to know exactly how they look, the belief they will feel worse if they do not gaze and

the desire to camouflage the perceived defect. They also found evidence to suggest that mirror-gazing is reinforced intermittently; on occasion the person with BDD will feel better after checking, but on the majority of occasions, he or she will feel worse afterwards. Furthermore, the person with BDD is rewarded temporarily as he or she believes that the reflection they see is exactly how they look to others, but when he or she leaves the mirror, the focus of attention shifts to the distorted internal image. In addition, research conducted with non-clinical participants has confirmed that prolonged mirror-gazing causes one's reflection to distort. The ensuing confusion inevitably results in uncertainty and anxiety for the person with BDD.

With regard to rumination, Veale (2004) states that the preoccupation in BDD can be explained in part by the fixing of one's attentional capacity on a distorted internal body image and the negative appraisal of that image. He adds, however, that little is known, '...about other cognitive processes that contribute to the nature of the preoccupation and the similarities or differences to a worry or an obsession. For example, the process might include metacognitions, comparisons with an ideal internal image or with other individuals, and anticipatory worry about future events'.

Research on comparing in people with BDD is somewhat lacking, but Veale, Kinderman, Riley and Lambrou (2003) found evidence to suggest that people with BDD are more concerned than control participants with failure to meet their own ideals, but that there was no difference with regard to meeting the perceived ideals of others. The authors employed ideas from self-discrepancy theory, suggesting that disorders such as

depression, social anxiety, eating disorders and paranoia result from discrepancies between the 'actual self' (the individual's representation of attributes that someone (either oneself or another person) believes the individual possesses) and either the 'should or ought self' (the individual's representation of attributes that someone (either oneself or another person) believes the person should or ought to possess) or the 'ideal self' (the individual's representation of attributes that someone (either oneself or another person) would ideally hope that the person would possess). They based their conclusions on evidence that people with BDD exhibit larger discrepancies between how they believe they actually look and how they would like to look or believe they should look than control participants. No significant discrepancies were evidenced, however, between how people with BDD believe they actually look and how they believe others see them or how others would ideally like them to look. These findings would suggest that people with BDD are more likely to compare their perceived actual appearance to an internal ideal, rather than to the appearance of other people. Veale (2004) mentions an unpublished study which used a modified dot probe procedure to investigate comparing in people with BDD. Evidence was found to suggest that people with BDD might compare themselves to people that they consider more attractive than themselves. In light of these somewhat contradictory findings, it seems likely that the object of comparison varies amongst people with BDD. Evidently, comparing in BDD, along with other aspects of the preoccupation such as metacognition, requires further empirical investigation.

1.6) Treatment

Phillips and Dufresne (2000) state, 'We know of no more difficult patients to treat than those with BDD'. Interventions for BDD include cosmetic surgery, dermatological treatments, medication and psychological therapy.

The literature on cosmetic surgery for people with BDD is littered with anecdotes of poor outcomes and cases where discontent has escalated as far as violence towards the surgeon (see Phillips, Grant, Sinisalchi and Albertini, 2001). Phillips et al. (2001), for example, reviewed surgical and non-psychiatric treatments for 289 individuals with BDD and found that just 7.3 percent of treatments led to both a decrease in concern with the treated body part and overall improvement in BDD symptomatology. In their study, 76.4 percent of people with BDD had sought intervention from either a cosmetic surgeon or a dermatologist, while 66.0 percent had received treatment from 1 or both of these professionals. Twenty-three percent of people with BDD in that same study had undergone cosmetic surgery. Veale et al. (1996) found similar rates (26 percent of their sample of people with BDD had undergone cosmetic surgery), while in a study by Hollander et al. (1993), 40 percent of people with BDD had received surgical intervention. Veale et al. (1996) found that 81 percent of people with BDD who had undergone non-psychiatric intervention for BDD were either dissatisfied or very dissatisfied.

In terms of medication, Cororve and Gleaves (2001) note that there is good evidence for

the prescribing of serotonin reuptake inhibitors (SRIs), particularly fluvoxamine and clomipramine (Phillips and Dufresne, 2000). Phillips (2001) states that ECT has been found to be ineffective and that there is little evidence for insight-oriented or supportive psychotherapy delivered in isolation.

Cororve and Gleaves (2001) reviewed cognitive-behavioural interventions for people with BDD and concluded that the most effective involved exposure (both in vivo and imaginal exposure to hierarchies of body parts or avoided situations), response prevention and cognitive restructuring. Many of the programmes reviewed also included self-monitoring, skills training, psychoeducation and reverse role-play.

Wilhelm, Otto, Lohr and Deckersbach (1999) studied the effect of CBT conducted in groups. The intervention involved 12 weekly sessions lasting 90 minutes and comprised psychoeducation, cognitive therapy, the scheduling of enjoyable events, exposure and response prevention. Participants were 13 people with BDD. Significant improvements were evidenced over treatment in terms of reduction in BDD and depression symptoms. Attrition was relatively high in this study (31 percent) and no control group was involved, so it is only possible to draw conclusions regarding association, as opposed to causality. Furthermore, no follow-up was conducted.

Neziroglu, McKay, Todaro and Yagura-Tobias (1996) investigated CBT for 17 people with BDD and co-morbid Axis II disorders. Daily sessions lasting 90 minutes were conducted over 4 weeks, involving exposure and response prevention and the

challenging of beliefs about appearance. It is unclear as to whether the CBT was conducted on an individual or group-basis. Twelve of 17 participants evidenced more than 50 percent improvement on an interview measure of BDD symptomatology and there was a statistically significant difference overall between pre-intervention and post-intervention scores. Again, no control group was used and no follow-up assessment conducted, rendering any conclusions regarding the effectiveness of CBT somewhat tentative. The authors found no association between number of personality disorders and outcome, but went on to highlight the need for research on prognostic variables.

Veale et al. (1996) conducted a pilot randomised controlled trial of CBT, involving 19 participants with BDD, who were allocated either to a 12 session course of individual CBT, or to a waiting list. The intervention involved the targetting of overvalued ideation, avoidance and checking behaviour. Techniques included exposure (no camouflage in social situations) and response prevention (teaching people not to ask for reassurance and training relatives not to respond). Attentional training was also incorporated, involving external focussing and terminating rituals according to external criteria, rather than feelings. People were helped to develop beliefs including the idea that beauty is subjective. No significant pre-post differences were evidenced in the waiting list control group, but statistically significant differences were found on both interview-based and self-report measures of BDD symptomatology and depressed mood in the treatment group. The authors emphasise the need for a larger randomised controlled trial, comparing CBT with other psychological and pharmacological interventions. No follow-up assessment was included in the study.

Rosen et al. (1995) investigated cognitive-behavioural body image therapy for BDD. Participants were 54 people with BDD, who were randomly assigned to CBT or no treatment. The intervention involved 8 group sessions, each lasting 2 hours, comprising modification of thoughts regarding body dissatisfaction and beliefs about appearance, exposure and reduction of checking behaviours. By the end of therapy, 82 percent of the treatment group no longer fulfilled the diagnostic criteria for BDD, compared to 2 percent of the waiting list control group. Seventy-seven percent of the treatment group maintained these gains at a follow-up assessment 4 months after the end of treatment. This follow-up was provided to people in the treatment group only, as those in the no-treatment group were offered therapy, after pre-post treatment measures had been administered. The authors point out that a significant minority of participants continued to experience symptoms at follow-up, a finding which points towards the need for a longer follow-up period in future studies. Again, this therapy format needs to be compared to other interventions, both psychological and pharmacological.

Cororve and Gleaves (2001) acknowledge that large effect sizes have been found in a number of controlled and uncontrolled studies of cognitive-behavioural interventions for BDD symptoms and associated features, including depression, body image, self-esteem, avoidance and anxiety. Neziroglu and Khemlani-Patel (2002), summarising research studies on CBT for BDD, conclude, however, that the literature suggests no difference between the efficacy of any one particular strategy over any other. Cororve and Gleaves (2001) proceed to note that the inconsistencies in the literature, including number of

sessions per week, length of treatment and inclusion and exclusion criteria, render comparisons across studies somewhat difficult. Furthermore, they emphasise the significant numbers of sufferers who either fail to respond to treatment or continue to experience some symptoms after treatment. Most of these interventions appear to be relatively short interventions with little or no follow-up. Evidently, there is a need for further research to address all these areas of criticism, with a view to developing more effective interventions for BDD.

In spite of these weaknesses in existing research, the draft NICE guideline for interventions for OCD and BDD suggests that those people with milder BDD should be treated with low intensity CBT (including exposure and response prevention), while those with moderate to severe impairment should receive either a course of serotonin reuptake inhibitors (SSRIs) or high intensity CBT. A combination of CBT and SSRIs should be offered to those with severe impairment (National Institute for Clinical Excellence, 2005).

2) Cognitive Processes and Metacognition

While a number of the cognitive-behavioural interventions for BDD in the aforementioned outcome studies target thoughts and beliefs regarding appearance, it is of interest that none to date has focussed specifically on the cognitive processes involved in the BDD preoccupation and the so-called 'meta' level of cognition (knowledge, beliefs, processes and strategies that appraise, monitor or control cognition (see Wells, 2000)). This omission comes as little surprise, however, when one notes the fact that little attention has been paid to incorporating such elements in the cognitive-behavioural models of BDD developed to date, upon which interventions are based (see above). Lack of consideration of metacognition is posited by some authors (e.g. Purdon and Clark, 1999) as an explanation of why significant numbers of people fail to respond or relapse following CBT for other psychological disorders. It is useful to review research on cognitive processes and metacognition in other disorders, before considering the possible application of this line of research enquiry to BDD.

2.1) Cognitive Processes

With regard to cognitive process, distinctions have been made in the literature between worry, obsessional thoughts and rumination. Studies aiming to differentiate between OCD and GAD, according to the nature of cognitions (e.g. Wells and Morrison, 1994; Tallis and Desilva, 1992; Turner, Beidel and Stanley, 1992) conclude that worry and obsessional thoughts are similar in many ways, in that they are repetitive, distressing

and difficult to control. Wells and Morrison (1994) add, however, that worry is more verbal, less image-based, more realistic, more voluntary and longer lasting than obsessional thoughts. With regard to the distinction between worry and rumination, Papageorgiou and Wells (2004) note that the content of worry differs from that of rumination, in that worry tends to focus more on future threat, while rumination is more concerned with past failures and losses. It is uncertain as to whether the preoccupation in BDD more closely approximates worry, obsessional thoughts or rumination.

2.2) Metacognition

Wells (2000) acknowledges these differences between worry, obsessional thoughts and rumination, but is keen to emphasise that, 'Whilst the content of the thought is undoubtedly important in determining the nature of psychological disturbance, *how* people think is an important dimension that has implications for psychological disorder and recovery'. Purdon and Clark (1999) emphasise further the limitations of traditional cognitive theory with its focus on the content of cognition. Papageorgiou and Wells (1999) note, 'It is not only the content of thought but also the process and metacognitive dimensions of particular types of thinking that may be implicated in problem maintenance'. Furthermore, Purdon and Clark (1999) state that the effectiveness of cognitive therapy may be enhanced through the teaching of strategies aiming to retrain metacognitive regulation and monitoring processes.

Flavell (1979) defines metacognition as, 'any knowledge or cognitive process that is involved in the appraisal, monitoring or control of cognition'. He divides metacognition

into 2 components: metacognitive knowledge (beliefs about factors affecting the course and outcome of cognitive enterprises) and metacognitive regulation (control processes). Consideration of these 2 aspects of *how* people think has certainly informed recent cognitive-behavioural models and interventions for a number of disorders, including OCD, GAD and depression. It is useful to outline existing research on cognitive processes and metacognition in the understanding and treatment of these related disorders, before considering the potential implications of such ideas for a cognitive-behavioural conceptualisation of BDD.

2.2.1) Metacognitive knowledge / beliefs

A role for metacognitive beliefs and thought appraisals is posited by researchers in a number of disorders, including OCD, GAD and depression. Metacognitive beliefs include negative beliefs (about the potentially negative consequences of having particular thoughts and of not being able to control those thoughts, e.g. 'If I think a certain thought, it will come true' or 'If I do not control my thoughts, I will go crazy') and positive beliefs (about the advantages of engaging in particular cognitive processes, such as worry, e.g. 'Worrying helps me solve problems')

2.2.1.i) OCD

Rachman and de Silva (1978) found preliminary evidence to suggest that approximately 80 percent of the population experience cognitive intrusions and that the content of normal and abnormal intrusions is similar. They concluded from their research that the two types of intrusions differ in terms of frequency, duration and intensity. Purdon and Clark (1993) ask why normal thoughts become a major preoccupation for a minority of individuals and hypothesise that beliefs about thoughts might be influential. Salkovskis (1999), explaining his theory of OCD, posits that the difference between normal intrusive cognitions and obsessional intrusive cognitions lies 'not in the occurrence or even the (un)controllability of the intrusions themselves, but rather in the interpretation made by obsessional patients of the occurrence and/or content of the intrusions'.

A number of studies lend support to the hypothesised importance of beliefs and appraisals in understanding the maintenance of OCD. Purdon and Clark (1993), for example, found evidence in a sample of 293 students to suggest that obsessional individuals hold dysfunctional beliefs regarding the need to control thoughts and posit that an inflated sense of responsibility plays a significant role in OCD. Freeston, Rheaume and Ladouceur (1996) propose 5 groupings of beliefs and appraisals, relevant to the understanding of OCD, based on clinical experience and research literature: overestimating the importance of thoughts and their derivatives; exaggerated responsibility for events beyond the control of the individual; the need to seek a perfect

state of absolute certainty; overestimation of the probability and severity of the consequences of negative events; and beliefs that anxiety caused by thoughts is unacceptable or dangerous.

Cartwright-Hatton and Wells (1997) developed a questionnaire (the 'Metacognitions Questionnaire' (MCQ)) from transcripts of semi-structured interviews with students and cognitive therapy sessions for people with anxiety. The MCQ consists of 5 subscales designed to measure beliefs about worry and intrusions. The instrument has been shown to be psychometrically reliable and valid. The authors administered the MCQ along with other questionnaires to 104 students, in order to test the hypothesis that positive (e.g. the belief that thinking particular thoughts can help find solutions and avoid catastrophe) and negative (e.g. beliefs regarding particular thoughts being uncontrollable or dangerous and beliefs about responsibility, superstition and punishment) metacognitive beliefs would be positively associated with measures of proneness to obsessive-compulsive symptoms. Their predictions were confirmed.

In a study by Wells and Papageorgiou (1998), particular negative metacognitive beliefs (regarding both the uncontrollability of particular thoughts and the dangers associated with those thoughts) were found to be predictive of obsessional thoughts in 120 non-anxious participants. Positive metacognitive beliefs were shown to predict obsessional checking, while negative metacognitive beliefs regarding danger and lack of control were predictive of washing rituals. These associations remained significant after controlling for the overlap between worry and obsessive-compulsive symptoms. These

findings indicate that particular metacognitive beliefs are associated with specific symptoms.

Emmelkamp and Aardema (1999) used questionnaires in a sample of 305 non-patients to investigate the relationship between metacognitive beliefs and specific obsessive-compulsive behaviours. They found that metacognitive beliefs regarding the fusion of thought and event (e.g. the belief that thinking about an event means it has happened or will happen) and beliefs about the consequences of having particular thoughts predict obsessional rumination, after depression is controlled for. They also found thought-event and thought-action fusion (e.g. the belief that thinking about doing something means one will perform that action) to be significantly predictive of compulsive checking.

On the basis of such findings and clinical experience, Wells (2000) posits 3 domains of metacognitive belief regarding obsessive thoughts that might be of relevance to understanding the maintenance of OCD: thought-event fusion (see above); thought-action fusion (see above); and thought-object fusion (e.g. the belief that objects can become contaminated with thoughts, feelings and memories). He notes that metacognitive beliefs regarding rituals and neutralising responses are also relevant. These include positive (e.g. the belief that the performing of rituals prevents unwanted events from occurring) and negative metacognitive beliefs (e.g. the belief that one could lose control or that one's rituals could take over).

While evidence certainly exists for the effectiveness of CBT for OCD, the number of people who fail to respond or relapse after treatment is noted in the draft NICE guideline for interventions for BDD and OCD (National Institute for Clinical Excellence, 2005). Wells (1997) emphasises the variability in the findings of outcome research on OCD and the absence of metacognitive elements from therapy programmes studied might help explain this variability. The need for systematic trials of metacognitive interventions for OCD is evident.

2.2.1.ii) GAD

Worry, like obsessions, has been found in both non-patient and clinical groups and the content of worry would seem to be similar in both groups. Craske, Rapee, Jackel and Barlow (1989), for example, found that the most common worry themes in both people with GAD and non-anxious control participants pertained to life circumstances. Turner, Beidel and Stanley (1992) note that cognitive processing variables, such as thought appraisals including perceptions of uncontrollability, might differentiate normal from pathological worry. The causes of the maintenance of worry remain somewhat elusive. Borkovec, Robinson, Pruzinsky and DePree (1983), for example, question why worry maintains despite containing elements one would expect to result in extinction. Matthews (1990) also asks why worry persists, despite it being a negative experience associated with negative thoughts and images, loss of mental control and negative affect. Wells (1995) developed a metacognitive model of GAD, involving 2 levels of worry; so-called 'Type I worry' (concerns about external daily events and non-cognitive

internal events, such as bodily sensations) and 'Type II worry' (a meta-level of worry about the nature and occurrence of thoughts). He suggests that metacognitive beliefs (Type II worry) might maintain GAD.

The hypothesised role of Type II worry (metacognitive beliefs) in the maintenance of GAD finds support in numerous research studies. A questionnaire study by Borkovec et al. (1983), for example, provides evidence that 'worriers' can be distinguished from 'non-worriers' by appraisals of uncontrollability of cognitive intrusions, once worrying is initiated. Craske et al. (1989) found that people with GAD and non-anxious control participants were differentiated by perceptions of reduced control on the part of the GAD group. Furthermore, Borkovec and Roemer (1995) found that people with GAD endorsed positive reasons for worrying more strongly than control participants.

Freeston, Rheaume, Letorte, Dugas and Ladouceur (1994) developed a questionnaire entitled 'Why Worry?' to investigate reasons for the maintenance of worry. They administered the questionnaire to 216 students, who were subsequently divided into 3 groups: those not meeting criteria for GAD; those meeting somatic criteria for GAD; and those meeting somatic and cognitive criteria for GAD. Evidence was found to suggest that 2 types of belief might inadvertently perpetuate worry, but the associative rather than causal nature of the study findings should be noted. One group of beliefs centred around ideas that worrying can facilitate avoidance of negative outcomes and minimise the effects of negative events, by decreasing guilt and avoiding disappointment. A second group of beliefs pertained to the positive effects of worrying,

including increasing control and finding solutions.

Cartwright-Hatton and Wells (1997) found a positive correlation between both positive and negative metacognitive beliefs and worry proneness and anxiety in 104 students[1]. A study by Wells and Papageorgiou (1998) of 120 community volunteers showed that particular negative (regarding uncontrollability and danger) and positive metacognitive beliefs were significant predictors of worry, after statistical controls for the overlap between worry and obsessive-compulsive symptoms. Papageorgiou and Wells (1999) found evidence in a sample of 54 students that greater anxiety was significantly associated with greater metaworry. All 3 studies suggest that metacognitive beliefs are associated with worry and anxiety.

Wells and Carter (1999) found that so-called 'Type II worry' (metacognitive beliefs) is a stronger and more reliable predictor than 'Type I worry' of pathological worry in non-patients. Wells (2000) mentions another unpublished study, in which people with GAD report significantly higher levels of negative metacognitive beliefs regarding worrying than people with panic disorder, social phobia or no history of any anxiety disorder. There was no significant difference with regard to positive metacognitive beliefs however.

[1] See page 29 for further details of the study.

Wells (1999) acknowledges that existing cognitive-behavioural interventions for GAD are effective, but notes the limitations of such approaches, specifically that only 50 percent of patients show 'high endstate functioning'. He feels that these limited effects might be explained in part by the absence of consideration of metacognition in such approaches. Wells (2000) states that single case evaluations demonstrate the effectiveness of a metacognitive approach to GAD, but there is clearly a need for more systematised research, including a comparison of standard CBT and metacognitive approaches.

2.2.1.iii) Depression / Rumination

The question of why rumination persists remains somewhat challenging, given that a positive association has been evidenced between the number of ruminative responses engaged in and length of depressed mood episode (Noelen-Hoeksema, Morrow and Fredrickson, 1993). Furthermore, experimental and prospective studies have shown that rumination (compared to distraction) maintains and exacerbates both induced and naturally occurring depressed mood (Morrow and Nolen-Hoeksema, 1990; Nolen-Hoeksema and Morrow, 1993). Papageorgiou and Wells (2004) posit a model of rumination and depression, in which positive metacognitive beliefs fuel the selection of rumination as a coping response to particular stressors. Once rumination has begun, negative metacognitive beliefs about ruminating become activated and this leads to the experience of depression.

A number of research studies support the role of metacognitive beliefs in explaining the maintenance of rumination and distinguishing normal and pathological rumination. Papageorgiou and Wells (2004), for example, cite findings from an unpublished study, suggesting that pathological rumination is distinguished from normal rumination by process and metacognitive dimensions, rather than by content. Watkins and Baracaia (2001) noted the similarities between worry in GAD and rumination in depression and predicted that rumination might be associated with particular metacognitive beliefs. They found that 80 percent of their sample of 61 people who identified themselves as suffering from rumination reported at least 1 perceived benefit for rumination. They proceeded to find evidence that high ruminators held beliefs about the positive benefits of rumination significantly more strongly than low ruminators.

Papageorgiou and Wells (2001) interviewed 14 people with recurrent major depression and found that all participants reported both advantages (positive metacognitive beliefs) and disadvantages (negative metacognitive beliefs) regarding rumination. These included beliefs about the function of rumination as a coping strategy and beliefs regarding the uncontrollability, harm and interpersonal and social consequences of rumination. The findings from this study were used to develop 2 instruments: the Positive Beliefs about Rumination Scale (PBRS: Papageorgiou and Wells, 2001) and the Negative Beliefs about Rumination Scale (NBRS: Papageorgiou, Wells and Meina, in preparation). Both the PBRS and the NBRS have been found to correlate significantly with rumination and depression in non-patients (Papageorgiou and Wells, 2001) and

people with major depressive disorder (Papageorgiou et al., in preparation).

The above findings on the connection between metacognitive beliefs, rumination and depression would point towards the incorporation of a metacognitive focus into interventions for depression. McMillan and Fisher (2004), summarising reviews of interventions for depression, state that cognitive therapy is an, 'efficacious treatment for mild to moderate depression' and also has relapse prevention effects. They note, however, that between 25 and 50 percent of people with depression continue to relapse, nevertheless. Furthermore, Roth and Fonagy (1996) comment that a large proportion of people with depression fail to respond fully to CBT or relapse after treatment. McMillan and Fisher (2004) hypothesise that the incorporation of cognitive processes in these interventions might improve treatment outcomes. Wells and Papageorgiou (2004) also suggest that therapeutic advantage might be gained by focussing on the rumination process.

Teasdale (1999), discussing metacognitive approaches (specifically, so-called 'mindfulness') to depressive rumination, notes that teaching people to relate to thoughts in a detached manner (as 'events in the mind') has a long history in Buddhism. Teasdale describes a group-based relapse prevention programme for people who have recovered from depression, the components of which are based on mindfulness principles. He cites studies providing preliminary evidence for the effectiveness of this approach for panic, GAD and psoriasis and also mentions unpublished data from a clinical trial which point towards the potential benefits of mindfulness training for

depression. The details of the trial are not provided and there is clearly a need for further research in this area.

2.2.1.iv) Hypochondriasis

Bouman and Meijer (1999) investigated whether hypochondriasis is characterised by general or content-specific metaworries. They administered the aforementioned MCQ and a hypochondriasis-specific measure of metacognition to 3 groups: people with hypochondriasis; matched healthy controls; and psychology students. Results showed that hypochondriasis was best predicted by negative metacognitive beliefs regarding danger and uncontrollability of thoughts about illness and cognitive self-consciousness. Wells (2000) encourages cautious interpretation of these findings owing to heterogeneity of the sample, but nonetheless, it would seem that the study provides at the very least preliminary evidence of the relevance of metacognitive beliefs to the maintenance of hypochondriasis. Focus on disorder-specific metacognitions would seem to be indicated for future research.

2.2.1.v) Summary of research on metacognitive beliefs

In summary, existing research findings on OCD, GAD and depression suggest that there are differences between clinical and non-clinical groups, with respect to metacognitive beliefs. Preliminary evidence indicates the effectiveness of approaches focussing on metacognitive beliefs, but empirical trials are necessary.

2.2.2) Metacognitive regulation (thought control strategies)

Rather like metacognitive beliefs, metacognitive strategies of thought control have been implicated in models of understanding the maintenance of a number of disorders, including OCD, GAD and depression. A number of studies suggest that attempted suppression of thoughts in non-clinical participants can inadvertently lead to an immediate or delayed increase in the frequency of those thoughts (e.g. Wegner, Schneider, Carter and White, 1987). Wells and Davies (1994) note the possibility that, 'some strategies, but not others, are counterproductive in their effects', given that little is known regarding the techniques people use to suppress unwanted thoughts. They proceed to emphasise the necessity of exploring thought control attempts that 'might be involved in the transformation of normal intrusive thoughts into pathological varieties'. Wells (2000) elaborates upon this theory, explaining that if thought control is used to avert some kind of catastrophe, then the non-occurrence thereof might be wrongly attributed to the use of the thought control strategy. Thought control is thereby negatively reinforced and no opportunity is given for disconfirmation of the underlying belief. Ladouceur et al. (2000) note that contemporary models of intrusive cognition, 'attribute an important role to what people do with their thoughts', in terms of effortful cognitive strategies employed in response to thoughts.

2.2.2.i) OCD and GAD

Salkovskis (1999), writing about OCD, posits that metacognitive beliefs and interpretations regarding responsibility link cognitive intrusions to so-called neutralising behaviours (thought control strategies). He hypothesises that people not suffering from OCD seek to control their thoughts to a lesser degree, because lack of control is not associated with negative consequences. He adds that any attempt made by people with OCD to reduce the frequency of such intrusions not only contributes to the maintenance of negative beliefs, but also increases the likelihood of further intrusions, thereby raising the level of preoccupation.

Wells (1997) emphasises the role of thought control strategies in his metacognitive model of GAD (see above for more details). He suggests that negative appraisals of the consequences of prolonged worrying motivate attempts at not worrying, which inadvertently increase the frequency of the unwanted thoughts that trigger the worry. Beliefs regarding the uncontrollability of worry are thereby reinforced.

A number of studies on the use of thought control strategies in non-clinical participants have implications for the understanding of OCD and GAD. Freeston, Ladouceur, Thibodeau and Gagnon (1991), for example, administered questionnaires to 125 students, in order to identify styles of response to intrusive cognitions and relate these styles to a number of thought dimensions. They found that 92 percent of participants

reported employing effortful strategies in response to intrusive thoughts. Cluster and factor analyses identified 3 broad groups of strategies: minimum attention (involving self-reassurance or no further action); sustained attention (involving thinking the thought through and seeking reassurance with another person); and escape or avoidance (including thought replacement, removal of the thought by a mental or physical action, distraction with surroundings or activities and thought stopping). The dominant style of response varied; 26 percent of participants reported a dominant style of minimum attention, 34 percent reported sustained attention and 40 percent reported escape or avoidance. Compared with the 'minimum attention' group, the 'sustained attention' and 'escape/avoidance' groups were found to be significantly more anxious and reported that the intrusive cognitions were more difficult to remove. Furthermore, participants who used escape or avoidance as a dominant strategy reported more sadness, worry, guilt and disapproval than participants using 'minimum attention' strategies. Within-participant analyses revealed that, compared to minimum attention strategies, sustained attention strategies were associated with significantly more varied and more frequently triggered thoughts. Escape/avoidance strategies were reported to be significantly less effective at removing thoughts and associated discomfort, than minimal attention strategies.

Freeston and Ladouceur (1993) administered a questionnaire to 534 hospital out-patients and escorts. They aimed to replicate and extend an earlier study (Freeston et al., 1991), which related dimensions of cognitive intrusions to dominant response style. They divided participants into 4 groups according to 2 dimensions of thought appraisal

(probability of the thought coming true (high or low) and disapproval of the thought (high or low)). Evidence was found that the dominant strategy was related to appraisals of probability and disapproval. Specifically, high probability and low disapproval appraisals were associated with greater use of 'sustained attention' strategies, while low probability and high disapproval appraisals were associated with greater use of 'escape/avoidance' strategies. The authors emphasise that these findings may well have implications for conceptualisations of OCD and GAD.

Freeston, Ladouceur, Provencher and Blais (1995) conducted structured interviews with 53 non-clinical participants, in order to explore whether situation, thought-related or emotional factors were related to the use of particular strategies and their effectiveness. Strategies used with each person's most frequent intrusive thought were explored and participants identified a mean of 8 different strategies. Seven major types of strategy were elicited from the reported repertoires: physical action, thought replacement, analysing the thought, talking to others, thought stopping, trying to convince oneself that the thought is of little importance and doing nothing. Evidence was found that the selection of specific strategies was related to situational factors, sequences of strategies, and thought intensity and appraisal. No specific strategy was significantly more or less efficient than any other and the mean ratings of the efficiency of the 7 major strategy types all fell between 2.0 and 2.7, on a 5-point likert scale (0 = 'not at all efficient', 4 = 'extremely efficient'). Clinical participants were not included in the study, but the authors emphasise the potential importance of the findings to understanding and treating disorders such as OCD, especially given the aforementioned universality of intrusive

thoughts (see Freeston et al., 1991).

Several studies have explored thought control strategies in clinical participants and others have compared the strategies of clinical and non-clinical participants. Freeston and Ladouceur (1997), for example, used structured interviews to explore the strategy repertoires of 29 people with OCD. Each person's most frequent thought was identified and the thought was then evaluated on a number of different dimensions. The repertoire of strategies used with that thought was then assessed according to context, intensity of thought, typical mood state when strategy was used, mood intensity and immediate efficiency of strategy. Participants reported between 6 and 18 different strategies, which were associated with low to moderate mean efficacy in terms of successful removal of the thought. No control group was included in the study, limiting interpretation of the findings.

Rachman and De Silva (1977) compared 8 people with OCD with 124 healthy control participants and found preliminary evidence to suggest that while normal and abnormal obsessions seem to be similar in content, abnormal obsessions are associated with more urges to neutralise. The difference in sample size and resultant reporting of raw scores as opposed to statistical calculations make the reliability of these findings somewhat questionable, but nonetheless worthy of mention.

Wells and Davies (1994) developed the Thought Control Questionnaire (TCQ)[2] to

[2] See Appendix 4 for details of sub-scale items

assess individuals' use of 5 categories of thought control strategy: distraction, punishment, re-appraisal, social control and worry. They administered the TCQ to a sample of 251 non-clinical participants and found significant associations between punishment and worry subscales and measures of emotional vulnerability. Amir, Cashman and Foa (1997) administered the TCQ to 55 people with OCD and 27 non-clinical participants and found evidence to suggest that people with OCD employ strategies involving punishment, reappraisal and social control more frequently than non-clinical control participants. Furthermore, non-clinical participants used distraction strategies more frequently than people with OCD.

Ladouceur et al. (2000) administered structured interviews to 38 people with OCD, 38 people with another anxiety disorder (mainly GAD) and 19 non-clinical participants. The interview explored strategies employed in response to each person's most frequent intrusive thought, asking questions regarding context, sequence, probability of the thought coming true in real life, intrusion intensity, mood state when the thought occurred, mood intensity, immediate efficiency of strategy in removing the thought or decreasing discomfort, number of times strategy was repeated and length of time strategy was used for. Compared to non-clinical participants, people with OCD or another anxiety disorder reported significantly more strategies, significantly more different types of strategy and significantly greater perseverance of strategy use. People with OCD were found to be more likely to engage in both overt and covert compulsions and less likely to engage in distracting activities and thought replacement than participants in the anxiety disorder and non-clinical groups. The 2 clinical groups

reported significantly lower efficiency of strategies than participants in the non-clinical group. There was no difference in strategy efficiency between the 2 clinical groups, indicating that difficulty in controlling intrusive thoughts may be common to different types of anxiety disorders. Furthermore, it was found that the people with OCD reported a significantly higher proportion of strategies that were linked to the content of the original thought, when compared to the anxiety disorder and non-clinical groups. This indicates that thought-strategy linkage in terms of content might be specific to OCD and not other anxiety disorders.

2.2.2.ii) Rumination / Depression

A number of studies have evidenced a relationship between frequency of negative thoughts and thought suppression. Wegner (1994), for example, proposes a theory, according to which thought suppression involves both a distraction and a thought monitoring process. While the processes are complementary, Enslave (1994) notes that the monitoring process can undermine the suppression process, inadvertently increasing the frequency and strength of negative thoughts. Support for this theory comes from studies evidencing an association between thought suppression and depressed mood (e.g. Wenzlaff, Rude, Taylor, Stultz and Sweatt, 2001).

Wenzlaff, Wegner and Roper (1988) found evidence to suggest that the efficacy of thought suppression decreases if the type of distraction is emotionally related to the original negative thought. They divided participants into dysphoric and non-dysphoric

groups and found that dysphoric participants tended to distract themselves with other negative thoughts, while dysphoric participants selected distracting thoughts of a positive nature. The suppression attempts of the non-dysphoric participants were less effective.

Reynolds and Brewin (1998) interviewed 3 groups of participants: people with major depression; people with post-traumatic stress disorder (PTSD); and non-clinical participants. The interview focussed on intrusive cognitions, emotional responses and the use and effectiveness of coping strategies. The strategies enquired about included suppression, neutralising, distraction by engaging in another task, thinking through, talking about the intrusions, and writing about the intrusions. The authors found that a variety of coping strategies were used by all 3 groups of participants. People with depression or PTSD reported significantly higher use of strategies involving distraction and suppression than the control group.

Reynolds and Wells (1999) administered the TCQ to people with depression and PTSD and found evidence that thought control strategies involving distraction, punishment and reappraisal were predictive of depression scores in depressed patients, while use of distraction predicted intrusion scores in people with PTSD.

2.2.2.iii) Summary

In summary, findings from research on metacognitive strategy use suggest that people

with OCD, GAD (or other anxiety disorders), depression and non-clinical participants select strategies from a common pool. Evidence suggests, however, that certain strategies may be more typical of clinical groups than non-clinical groups and that particular strategies may be more counterproductive than others. Further research is clearly needed.

2.3) Cognitive processes and metacognition in BDD

Rather like OCD, GAD, depression and hypochondriasis, BDD is characterised by persistent, recurrent thoughts. As discussed above, a number of research studies have demonstrated that the content of the thoughts characterising disorders, such as OCD, GAD and depression, differs little from that of non-pathological thoughts. Phillips (1986) points out that the concerns of people with BDD seem to ressemble 'normal concerns' in terms of their content. She posits that the difference between the two may be, 'largely a matter of degree' (BDD involving greater preoccupation, distress and impairment). Furthermore, Osman, Cooper, Hackman and Veale (2004) compared 18 people with BDD and 18 non-clinical control participants and found evidence that the two groups were equally likely to experience spontaneous images of their appearance. Concern about appearance would certainly seem to be a widespread phenomenon, as evidenced in a study by Cash, Winstead and Janda (1986), who surveyed 2,000 people and found that only 18 percent of the men and 7 percent of the women had little concern about their appearance. In light of these findings, it is likely that the content of cognitions in BDD is similar to that of people with normal concerns about appearance.

This hypothesis demands further investigation, however.

The answer to the question of why such thoughts and images develop into a preoccupation for people with BDD (and why the preoccupation does not simply extinguish because of its association with negative affect) remains somewhat elusive. With respect to OCD, GAD and depression, questions regarding the similarities in terms of content between pathological and non-pathological cognitions and the persistence of cognitions gave rise to exploration of metacognitive aspects of these disorders. Metacognition is given little mention in the literature on BDD, however. Veale and Riley (2001) note that mirror-gazing sequences would seem to be designed 'to prevent feared outcomes', but do not elaborate upon what these feared outcomes and metacognitive beliefs might be. Veale (2004) mentions that the cognitive processes contributing to the preoccupation might well include metacognitions and proceeds to emphasise the need for research on this aspect of BDD

3) Conclusions and Suggestions for Future Research

It has become clear from this review that psychologically-oriented research on BDD is in its infancy. The relative abundance of literature on diagnostic features, psychiatric classification, prevalence and co-morbidity indicates a predominance of psychiatric perspectives. Furthermore, many of the findings, particularly on classification are somewhat contradictory. While further research on prevalence and co-morbidity in BDD might well be useful, the need for psychological research seems rather more pressing.

Existing cognitive-behavioural models of BDD are convincing (e.g. Veale, 2004), but further research on the various components and maintenance mechanisms within these models is required. As Veale (2004) points out, preliminary research evidence supports the inclusion of overt safety-behaviours (e.g. checking one's appearance in mirrors) and associated negative affect in such models. Research on the cognitive components of proposed models, such as rumination and metacognition, is distinctly lacking, however.

A number of research trials have been conducted on CBT for BDD, but the majority of these had small samples and no follow-up. The outcome literature is also rather inconsistent, in terms of therapy format and length, therapy components and inclusion and exclusion criteria. This renders comparison across studies rather difficult and future outcome research should definitely aim for consistency in this respect.

Research on cognitive-behavioural therapy for BDD and other disorders, such as OCD, GAD and depression, has revealed that a proportion of participants either fail to respond or relapse following therapy. This fact has given impetus to research on cognitive processes and metacognition in OCD, GAD and depression. Research to date indicates that thought content is broadly similar in people with such disorders and their non-clinical counterparts. Research on metacognitive beliefs and the use of metacognitive strategies of thought control suggests that there are significant differences between clinical and non-clinical groups in OCD, GAD and depression, which may have implications for understanding and treating these disorders.

There is clearly a lack of research on cognitive processes and metacognition in BDD. Furthermore, the findings of such research on other disorders are encouraging, indicating that research on cognitive and metacognitive aspects of BDD might well be informative, for psychological models and interventions for this disorder.

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PART 2

EMPIRICAL PAPER

ABSTRACT

Cognitive-behavioural models of Body Dysmorphic Disorder (BDD) posit that increased attention on a distorted internal body image, along with beliefs, values and rules about the importance of appearance, leads to negative appraisal of that image. However, little is known about the content and metacognitive aspects of the preoccupation that defines the disorder.

The objective of the current study was to explore preoccupation in BDD, by investigating the content of thoughts about appearance and metacognition in 22 people meeting DSM-IV criteria for BDD and 22 people with 'normal concerns' regarding appearance. A structured interview and questionnaires were used to investigate the content of the preoccupation and 2 aspects of metacognition (metacognitive beliefs and cognitive strategies employed in an attempt to control thoughts about appearance). Quantitative analyses were undertaken to test specific hypotheses and descriptive data were presented to complement these analyses.

The content of thoughts about appearance was found to be broadly similar in the 2 groups, but participants with BDD were found to endorse negative metacognitive beliefs significantly more strongly, to employ thought control strategies involving punishment significantly more frequently and to report significantly lower effectiveness of the 2 most frequently employed thought control strategies.

These findings require replication, but have definite implications for cognitive-behavioural models and interventions for BDD.

1) Introduction

1.1) Body Dysmorphic Disorder

1.1.1) Diagnostic Criteria and Clinical Features

Body Dysmorphic Disorder (BDD) is defined in the DSM-IV as a 'preoccupation with an imagined defect in appearance. If a slight physical anomaly is present, the person's concern is markedly excessive'. In order to fulfil diagnostic criteria, the preoccupation must be associated with 'clinically significant distress or impairment in social, occupational, or other important areas of functioning' (American Psychiatric Association, APA, 1994). Veale (2004) describes the principal clinical characteristics of BDD: prolonged gazing in mirrors; comparing one's appearance to that of others; camouflaging the perceived defect (with make-up, for example); picking the skin; seeking reassurance from others; and avoidance of social situations and intimacy.

1.1.2) Prevalence

Estimates of the prevalence of BDD vary and Oosthuizen, Lambert and Castle (1998) emphasise that any statements regarding prevalence should be considered speculative at this stage. Otto, Wilhelm, Cohen and Harlow (2001) suggest a prevalence of 0.7 percent in the general population, while rates of BDD in people seeking cosmetic surgery have been estimated at 6 percent (Altamura, Paluello, Mundo, Medda and Mannu, 2001).

Phillips and Dufresne (2000) describe a study in which 11.9 percent of 268 people presenting for dermatological treatment met diagnostic criteria for BDD. The variation has been attributed to referral bias and research inclusion criteria (Phillips and Diaz, 1997), under-diagnosis owing to shame and secrecy (Neziroglu and Yaryura-Tobias, 1997), the difficulties in engaging and therefore assessing people with BDD (Veale et al., 1996) and the often indistinct boundary between BDD and normal concerns (Phillips, 1991). Studies reporting gender differences in the prevalence of BDD are somewhat contradictory (e.g. Hollander, Cohen and Simeon, 1993; Rosen, Reiter and Orosan, 1995; Phillips, 1998). Perugi et al. (1997) remark that, 'where BDD is the primary presenting problem, it is almost never found without co-morbidity. Veale (2004), Cororve and Gleaves (2001) and Gunstad and Phillips (2003) cite numerous studies evidencing co-morbidity with depression (up to 80 percent), social phobia (38 percent), obsessive-compulsive disorder (OCD) (8 to 37 percent), eating disorders (10 to 20 percent) and personality disorders (57 to 100 percent).

1.1.3) Aetiology

Phillips (1991) describes theories regarding the aetiology of BDD, ranging from the conceptualisation of BDD as a defence mechanism to hypotheses about neurotransmitter dysfunction. Cororve and Gleaves (2001) note that cognitive-behavioural models of BDD have received most attention and empirical support.

Rosen et al. (1995), for example, developed a cognitive-behavioural model of BDD,

positing that appearance preoccupations begin in adolescence (with heightened attention from others to bodily changes) and trigger dysfunctional assumptions regarding the normality of appearance. These assumptions affect personality and self-esteem. Negative self-statements regarding appearance become automatic and entrenched in the person's belief system, avoidance prevents habituation to one's own appearance, and compulsive behaviours serve to increase longer-term anxiety.

Veale et al. (1996) suggest that core beliefs regarding rejection and the importance of appearance develop from biological predisposition, early childhood experiences and cultural factors. The discrepancy between perceived body image and perfectionist ideals is magnified by beliefs about the importance of appearance. Biased interpretations of incoming information ensue. The heightened focus on a distorted internal body image leads to assumptions that others hold a similar view of the person's appearance. As a result, the person resorts to behaviours such as avoidance and camouflage, which serve to reinforce the dysfunctional beliefs and selective attention.

Veale (2004) elaborates this cognitive-behavioural model further, hypothesising that people with BDD view themselves as aesthetic objects, rather like people with social phobia are thought to regard themselves to be social objects. He posits that a trigger (the sight of oneself in a mirror, for example) activates a distorted internal body image. Excessive self-focussed attention increases awareness and distortion of the image and, when combined with existing values, beliefs and rules regarding the importance of appearance, contributes to negative appraisal of the distorted image. The negative

appraisal increases the self-focussed attention on the image and also leads to mood changes, safety behaviours and rumination, all of which serve to reinforce the self-focussed attention and negative appraisal of the image.

1.1.4) Interventions

Interventions for BDD include cosmetic surgery, dermatological treatments, medication and cognitive-behavioural therapy (CBT). The literature on cosmetic surgery for people with BDD is littered with anecdotes of poor outcomes and cases where discontent has escalated as far as violence towards the surgeon (see Phillips, Grant, Sinisalchi and Albertini, 2001). Phillips et al. (2001) reviewed surgical and non-psychiatric treatments and found that just 7.3 percent of treatments led to both a decrease in concern with the treated body part and overall improvement in BDD symptomatology. Veale et al. (1996) found that 81 percent of people with BDD who had undergone non-psychiatric intervention for BDD were either dissatisfied or very dissatisfied. In terms of medication, Cororve and Gleaves (2001) note that there is good evidence for the prescribing of serotonin reuptake inhibitors (SRIs), particularly fluvoxamine and clomipramine (Phillips and Dufresne, 2000).

Cororve and Gleaves (2001) reviewed cognitive-behavioural interventions for people with BDD and concluded that the most effective involved exposure (both in vivo and imaginal exposure to hierarchies of body parts or avoided situations), response prevention and cognitive restructuring. Many of the programmes reviewed also

included self-monitoring, skills training, psychoeducation and reverse role-play (e.g. Wilhelm, Otto, Lohr & Deckersbach, 1999; Neziroglu, McKay, Todaro and Yagura-Tobias, 1996; Veale et al., 1996; and Rosen et al., 1995).

Cororve and Gleaves (2001) acknowledge that large effect sizes have been found in a number of these uncontrolled and controlled studies. Weaknesses of studies to date include high attrition (Wilhelm et al. 1999), lack of control group (Wilhelm et al., 1999; Nezirgolu et al., 1996), lack of follow-up (Wilhelm et al., 1999; Neziroglu et al., 1996; Veale et al., 1996), lack of comparison with other interventions (Wilhelm et al., 1999; Neziroglu et al., 1996; Veale et al., 1996; Rosen et al., 1995) and small sample sizes (Wilhelm et al., 1999; Neziroglu et al., 1996; Veale et al., 1996). Cororve and Gleaves (2001) note the inconsistencies in the literature, including number of sessions per week, length of treatment and inclusion and exclusion criteria, rendering comparisons across studies somewhat problematic. Furthermore, they emphasise the significant numbers of sufferers who either fail to respond to treatment or continue to experience symptoms after treatment. In spite of the methodological weaknesses in the research, the draft NICE guideline for interventions for OCD and BDD suggests that people with milder BDD should be treated with low intensity CBT (including exposure and response prevention), people with moderate to severe impairment should receive either a course of SRIs or high intensity CBT, and those with severe impairment should be offered a combination of CBT and SRIs (National Institute for Clinical Excellence, 2005).

1.1.5) Summary

It would seem that psychological perspectives are somewhat lacking in the research literature on BDD to date. While psychiatrically-oriented research on issues such as classification and co-morbidity are useful, the often contradictory nature of existing papers is confusing. In terms of psychological research, existing cognitive-behavioural models are certainly convincing, but there is a particular need for validating research on cognitive process aspects of those models (see Veale, 2004).

1.2) Cognitive processes and metacognition

While a number of the cognitive-behavioural interventions for BDD in the aforementioned outcome studies target thoughts and beliefs regarding appearance, it is of interest that none to date has focussed specifically on the cognitive processes involved in the BDD preoccupation and the so-called 'meta' level of cognition (knowledge, beliefs, processes and strategies that appraise, monitor or control cognition (see Wells, 2000)). Lack of consideration of metacognition is posited by some authors (e.g. Purdon and Clark, 1999) as a possible explanation of why significant numbers of people fail to respond to or relapse following CBT for other psychological disorders. It is useful to review research on cognitive processes and metacognition in other disorders, before considering the possible application of this line of enquiry to BDD.

1.2.1) Cognitive Processes

With regard to cognitive process, distinctions have been made in the literature between worry, obsessional thoughts and rumination. Studies aiming to differentiate between OCD and GAD (e.g. Wells and Morrison, 1994; Tallis and De Silva, 1992; Turner, Beidel and Stanley, 1992) conclude that worry and obsessional thoughts are similar in many ways, in that they are repetitive, distressing and difficult to control. Wells and Morrison (1994) add, however, that worry is more verbal, less image-based, more realistic, more voluntary and longer lasting than obsessional thoughts. Papageorgiou and Wells (2004) note that the content of worry differs from that of rumination, in that worry tends to focus more on future threat, while rumination is more concerned with past failures and losses. It is uncertain as to whether the preoccupation in BDD more closely approximates worry, obsessional thoughts or rumination.

1.2.2) Metacognition

Wells (2000) acknowledges these differences between worry, obsessional thoughts and rumination, but is keen to emphasise that, 'Whilst the content of the thought is undoubtedly important in determining the nature of psychological disturbance, *how* people think is an important dimension that has implications for psychological disorder and recovery'. Papageorgiou and Wells (1999) note, 'It is not only the content of thought but also the process and metacognitive dimensions of particular types of

thinking that may be implicated in problem maintenance'. Furthermore, Purdon and Clark (1999) hypothesise that the effectiveness of cognitive therapy may be enhanced through the teaching of strategies aiming to retrain metacognitive regulation and monitoring processes.

Flavell (1979) defines metacognition as, 'any knowledge or cognitive process that is involved in the appraisal, monitoring or control of cognition'. He divides metacognition into 2 components: metacognitive knowledge (beliefs about factors affecting the course and outcome of cognitive enterprises) and metacognitive regulation (control processes). Consideration of these 2 aspects of *how* people think has certainly informed recent cognitive-behavioural models and interventions for a number of disorders, including OCD, Generalised Anxiety Disorder (GAD) and depression.

1.2.2.i) Metacognitive beliefs

A role for metacognitive beliefs and thought appraisals is posited by researchers in a number of disorders, including OCD, GAD and depression. Metacognitive beliefs can be both negative (about the potentially negative consequences of having particular thoughts and of not being able to control those thoughts, e.g. 'If I think a certain thought, it will come true' or 'If I do not control my thoughts, I will go crazy') and positive (about the advantages of engaging in particular cognitive processes, such as worry, e.g. 'Worrying helps me solve problems')

1.2.2.i.a) OCD

Rachman and De Silva (1978) found preliminary evidence to suggest that approximately 80 percent of the population experience cognitive intrusions, in the form of obsessions and that the content of normal and abnormal obsessions is similar. Salkovskis (1999), explaining his theory of OCD, posits that the difference between normal intrusive cognitions and obsessional intrusive cognitions lies '...in the interpretation made by obsessional patients of the occurrence and/or content of the intrusions'. A number of studies lend support to the hypothesised importance of beliefs and appraisals in understanding the maintenance of OCD (e.g. Purdon and Clark, 1993; Freeston, Rheaume and Ladouceur, 1996; Cartwright-Hatton and Wells, 1997; Wells and Papageorgiou, 1998; and Emmelkamp and Aardema, 1999). While evidence certainly exists for the effectiveness of CBT for OCD, the number of people who fail to respond or relapse after treatment is noted in the draft NICE guideline for interventions for BDD and OCD (National Institute for Clinical Excellence, 2005). Wells (1997) emphasises the variability in the findings of outcome research on OCD. The absence of metacognitive elements from therapy programmes studied might help explain this variability. The need for systematic trials of metacognitive interventions for OCD is evident.

1.2.2.i.b) GAD / Worry

Worry, like obsessions, has been found in both non-patient and clinical groups and the

content of worry would seem to be similar in both groups (see Craske, Rapee, Jackel and Barlow, 1989). The causes of the maintenance of worry remain somewhat elusive, given the associated negative affect which one would expect to result in extinction (see Borkovec, Robinson, Pruzinsky and DePree, 1983). Wells (1995) developed a metacognitive model of GAD, involving 2 levels of worry; so-called 'Type I worry' (concerns about external daily events and non-cognitive internal events, such as bodily sensations) and 'Type II worry' (a meta-level of worry about the nature and occurrence of thoughts). He suggests that metacognitive beliefs (Type II worry) might maintain GAD. The hypothesised role of Type II worry (metacognitive beliefs) in the maintenance of GAD finds support in numerous research studies (e.g. Borkovec et al., 1983; Craske et al., 1989; Borkovec and Roemer, 1995; Freeston, Rheaume, Letorte, Dugas and Ladouceur, 1994; Cartwright-Hatton and Wells, 1997; Wells and Papageorgiou, 1998; Papageorgiou and Wells, 1999; and Wells and Carter, 1999)

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Wells (1999) acknowledges that existing cognitive-behavioural interventions for GAD are effective, but notes the limitations of such approaches, specifically that only 50 percent of patients show 'high endstate functioning'. He feels that these limited effects might be explained in part by the absence of consideration of metacognition in such approaches. Wells (2000) states that single case evaluations demonstrate the effectiveness of a metacognitive approach to GAD, but there is clearly a need for more systematised research, including a comparison of standard CBT and metacognitive approaches.

1.2.2.i.c) Depression / Rumination

The question of why rumination persists remains somewhat challenging, given that a positive association has been evidenced between the number of ruminative responses engaged in and length of depressed mood episode (Noelen-Hoeksema, Morrow and Fredrickson, 1993). Papageorgiou and Wells (2004) posit a model of rumination and depression, in which positive metacognitive beliefs fuel the selection of rumination as a coping response to particular stressors. Once rumination has begun, negative metacognitive beliefs about ruminating become activated and this leads to the experience of depression.

A number of research studies support the role of metacognitive beliefs in explaining the maintenance of rumination and distinguishing normal and pathological rumination (e.g. Papageorgiou and Wells, 2004; Watkins and Baracaia, 2001; Papageorgiou and Wells, 2001). These findings would point towards the incorporation of a metacognitive focus into interventions for depression. Roth and Fonagy (1996) comment that a large proportion of people with depression fail to respond fully to CBT or relapse after treatment. McMillan and Fisher (2004) hypothesise that the consideration of cognitive processes in CBT interventions for depression might improve treatment outcomes and Wells and Papaeorgiou (2004) suggest that therapeutic advantage might be gained by focussing on the rumination process. There is clearly a need for further research in this area.

1.2.2.ii) Metacognitive regulation (thought control strategies)

Rather like metacognitive beliefs, metacognitive strategies of thought control have been implicated in models of understanding the maintenance of a number of disorders, including OCD, GAD and depression. A number of studies suggest that attempted suppression of thoughts in non-clinical participants can inadvertently lead to an immediate or delayed increase in the frequency of those thoughts (e.g. Wegner, Schneider, Carter and White, 1987). Ladouceur et al. (2000) note that contemporary models of intrusive cognition, 'attribute an important role to what people do with their thoughts', in terms of effortful cognitive strategies employed in response to thoughts. Wells and Davies (1994) note the possibility that, 'some strategies, but not others, are counterproductive in their effects' and emphasise the necessity of exploring thought control attempts that 'might be involved in the transformation of normal intrusive thoughts into pathological varieties'. It is possible that thought control attempts, involving the avoidance of particular thoughts, inevitably reduce exposure to those thoughts and make extinction far less likely (see Matthews, 1990). Wells (2000) posits that if thought control is used to avert some kind of catastrophe, then the non-occurrence of this catastrophe might be wrongly attributed to the use of the thought control strategy. Thought control is thereby negatively reinforced and no opportunity is given for disconfirmation of the underlying belief.

1.2.2.ii.a) OCD and GAD

Salkovskis (1999), writing about OCD, hypothesises that people not suffering from OCD seek to control their thoughts to a lesser degree, because lack of control is not associated with negative consequences. He adds that any attempt made by people with OCD to reduce the frequency of such intrusions not only contributes to the maintenance of negative beliefs, but also increases the likelihood of further intrusions, thereby raising the level of preoccupation. Wells (1997), in his metacognitive model of GAD (see above for more details), suggests that negative appraisals of the consequences of prolonged worrying motivate attempts at not worrying, which inadvertently increase the frequency of the unwanted thoughts that trigger the worry.

A number of studies on the use of thought control strategies in non-clinical participants have implications for the understanding of OCD and GAD. Freeston, Ladouceur, Thibodeau and Gagnon (1991) found that 92 percent of non-clinical participants reported employing effortful strategies in response to intrusive thoughts. They divided participants into 3 groups according to their dominant strategy: minimum attention; sustained attention; and escape/avoidance. Compared to people whose dominant strategy involved paying minimum attention to the thought, people whose dominant strategy involved either sustained attention to the thought or escape/avoidance from the thought were found to be significantly more anxious and reported that the intrusive cognitions were significantly more difficult to remove. Furthermore, participants whose dominant strategy involved escape/avoidance reported more sadness, worry, guilt and disapproval

than participants using minimum attention strategies. Within-participant analyses revealed that, compared to minimum attention strategies, sustained attention strategies were associated with significantly more varied and more frequently triggered thoughts. Escape/avoidance strategies were reported to be significantly less effective at removing thoughts and associated discomfort, than minimal attention strategies.

Freeston, Ladouceur, Provencher and Blais (1995) elicited 7 major strategy types from semi-structured interviews with non-clinical participants: physical action, thought replacement, analysing the thought, talking to others, thought stopping, trying to convince oneself that the thought is of little importance and doing nothing. Evidence was found that the selection of specific strategies was related to situational factors, sequences of strategies, and thought intensity and appraisal.

Several studies have explored thought control strategies in clinical participants and others have compared the strategies of clinical and non-clinical participants. Freeston and Ladouceur (1997) used structured interviews to explore the strategy repertoires of people with OCD. Participants reported between 6 and 18 different strategies, which were associated with low to moderate mean efficacy in terms of successful removal of the thought. Rachman and De Silva (1977) compared people with OCD with healthy control participants and found preliminary evidence to suggest that while normal and abnormal obsessions seem to be similar in content, abnormal obsessions are associated with more urges to neutralise. Wells and Davies (1994) developed the Thought Control Questionnaire (TCQ) to assess individuals' use of 5 categories of thought control

strategy: distraction, punishment, re-appraisal, social control and worry. They found a number of significant associations between particular strategy types (worry and punishment) and measures of emotional vulnerability in non-clinical participants. Evidence has also been found to suggest that people with OCD employ strategies involving punishment, reappraisal and social control more frequently than non-clinical control participants, while non-clinical participants used distraction strategies more frequently than people with OCD (Amir, Cashman and Foa, 1997). Ladouceur et al. (2000) administered structured interviews and found that people with OCD or another anxiety disorder reported significantly more strategies, significantly more different types of strategy and significantly greater perseverance of strategy use than non-clinical participants. People with OCD were found to be more likely to engage in both overt and covert compulsions and less likely to engage in distracting activities and thought replacement than participants in the anxiety disorder and non-clinical groups. The 2 clinical groups reported significantly lower efficiency of strategies than participants in the non-clinical group.

1.2.2.ii.b) Depression / Rumination

A number of studies have evidenced a relationship between thought suppression and depressed mood (e.g. Wenzlaff, Rude, Taylor, Stultz and Sweatt, 2001), indicating that thought suppression can be counterproductive. Reynolds and Brewin (1998) interviewed people with major depression and non-clinical participants. The authors found that people with depression reported significantly higher use of strategies

involving distraction and suppression than the control group. Reynolds and Wells (1999) administered the TCQ to people with depression and found evidence that thought control strategies involving distraction, punishment and reappraisal were predictive of depression scores.

1.2.3 Summary

It would seem that pathological thoughts are broadly similar to non-pathological thoughts in OCD, GAD and depression. Existing research findings on OCD, GAD and depression suggest that there are differences between clinical and non-clinical groups, with respect to metacognitive beliefs. Furthermore, it has been demonstrated that clinical and non-clinical participants select strategies from a common pool, but that certain strategies may be more typical of clinical groups and that certain strategies may be more counterproductive than others. Preliminary evidence indicates the effectiveness of approaches focussing on metacognitive beliefs, but empirical trials are necessary.

1.3) Cognitive processes and metacognition in BDD

Rather like OCD, GAD and depression, BDD is characterised by persistent, recurrent thoughts. As discussed above, a number of research studies have demonstrated that the content of the thoughts characterising OCD, GAD and depression, differs little from that of non-pathological thoughts. Concern about appearance would certainly seem to be a widespread phenomenon (see Cash, Winstead and Janda, 1986). Phillips (1986) points

out that the concerns of people with BDD seem to resemble 'normal concerns' in terms of content. Furthermore, Osman, Cooper, Hackman and Veale (2004) found evidence that people with BDD and non-clinical participants were equally likely to experience spontaneous images regarding their appearance. In light of these findings, it is probable that the content of cognitions in BDD is similar to that of people with normal concerns about appearance. This hypothesis demands empirical investigation, however.

The answer to the question of why such thoughts and images develop into a preoccupation for people with BDD (and why that preoccupation does not simply extinguish because of associated negative affect) remains somewhat elusive. Questions regarding the persistence of unwanted cognitions in OCD, GAD and depression gave rise to the exploration of metacognitive aspects of these disorders, the results of which have been highly informative. Metacognition is given little mention in the literature on BDD, however. Veale and Riley (2001) note that mirror-gazing sequences would seem to be designed 'to prevent feared outcomes', but do not elaborate upon what these feared outcomes and metacognitive beliefs might be. Veale (2004) states that the cognitive processes contributing to the preoccupation might include metacognitions, and emphasises the need for research on this aspect of BDD. It is likely that there would be differences between people with BDD and non-clinical participants, in terms of strength of metacognitive beliefs and use of metacognitive strategies of thought control.

In summary, research on cognitive processes and metacognition in BDD is clearly lacking, while such research on other disorders has been encouraging and informative.

Therefore, it seems likely that empirical research on thought content, cognitive processes and metacognition in BDD would be prove informative for cognitive-behavioural models and interventions for this disorder.

1.4) Aims and research hypotheses

The current study has 2 principal aims:

1) to investigate the content of appearance-related thoughts and images in people with BDD and people with 'normal concerns' regarding appearance.

2) to investigate metacognition (metacognitive beliefs and thought control strategies) in people with BDD and people with 'normal concerns' regarding appearance.

These aims will be pursued using quantitative analyses, complemented by the presentation of coded descriptive data. It is hoped that the descriptive data will allow for the capturing of experiences beyond the a priori categories used for the quantitative analyses.

Based on the existing research literature on BDD and related disorders, in addition to consultation with lead UK clinicians and researchers working with people with BDD[3], 5

[3] This consultation comprised individual meetings with lead clinicians and presentation and discussion of the research proposal at a quarterly meeting of UK-based BDD researchers.

main research hypotheses were devised:

1) The content of thoughts about appearance will be similar for people with BDD and people with 'normal concerns' regarding appearance: there will be no significant difference between people with BDD and people with 'normal concerns' about appearance as to whether they do or do not report experiencing 6 content-related categories of thoughts about appearance*.

2) Compared to people with 'normal concerns' about appearance, people with BDD will endorse both positive and negative metacognitive beliefs significantly more strongly.

3) There will be significant differences between people with BDD and people with 'normal concerns' about appearance, with regard to frequency of use of different types of thought control strategy.

4) Compared to people with 'normal concerns', people with BDD will report significantly lower effectiveness of their two most frequently employed strategies (1 involving avoidance of thoughts and 1 involving engagement with thoughts) at reducing the frequency, intensity and distress associated with thoughts about appearance*.

5) The most frequently employed engagement strategy would be rated significantly

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* There were 6 content-related categories of thought about appearance (self-critical/attacking thoughts, past-oriented thoughts, thoughts about the future, thoughts about what other people might think of one's appearance, comparing thoughts and planning for the future). Participants were asked to rate how often they experience each type of thought.

more effective than the most frequently employed avoidance strategy, at reducing the frequency, intensity and distress associated with thoughts about appearance.

Three subsidiary hypotheses were also devised:

6) Compared to people with 'normal concerns' about appearance, people with BDD will report experiencing significantly more frequent thoughts in the 6 content-related categories of thoughts about appearance[6].

7) Compared to people with 'normal concerns' about appearance, people with BDD will report significantly higher levels of negative affect associated with thoughts about appearance.

8) Compared to people with 'normal concerns' about appearance, people with BDD will report that thoughts about appearance have a significantly greater impact on functioning.

[5] See page 170 for further details of the engagement versus avoidance distinction.
[6] See footnote 4.

2) Method

2.1) Participants

Twenty-two participants with a primary diagnosis of BDD and 22 participants with 'normal concerns' regarding appearance were recruited for this study. Owing to the complex, somewhat abstract nature of many of the interview questions, it was considered necessary to stipulate that only participants speaking fluent English should be recruited to the study. Following similar studies on OCD (e.g. Ladouceur et al., 2000), participants aged less than 18 years or more than 60 years were not recruited to the study. Participants in the 2 groups were matched according to gender.

2.1.1) Clinical Participants

Participants for the BDD group were recruited through the Consultant Psychiatrist heading a specialist unit in North London and were assessed to ensure that they met DSM-IV (American Psychiatric Association, 1994) criteria for BDD, according to the Structured Clinical Interview for DSM-IV (SCID: Spitzer, Williams and Gibbons, 1996). Responses to items on the Body Dysmorphic Disorder Questionnaire - Revised (BDDQ-R: Phillips, 2003) (see Appendix 1), administered at the interview appointment, provided further validation of this diagnosis. Participants included in-patients, out-patients and day hospital patients.

Following convention of research in this field, participants with concurrent dementia or organic brain disorder, eating disorder, schizophrenia, substance or alcohol misuse and those preoccupied primarily with their weight or shape were excluded by their Consultant Psychiatrist prior to referral to the study (Veale et al., 1996; Osman et al., 2004). Scores on the Brief Symptom Inventory (BSI: Derogatis, 1975) and responses to an item regarding current and past psychiatric diagnoses on the 'Personal Details' questionnaire (see Appendix 2) provided additional means of ensuring the exclusion of participants with these co-morbid diagnoses. As outlined above, there is high co-morbidity in BDD with OCD, social phobia, depression and personality disorder. Any attempt to exclude participants with these disorders from the clinical group would render recruitment near impossible and would also result in findings of limited clinical relevance. Therefore, participants with co-morbid social phobia, OCD, depression or personality disorder were not excluded, providing the primary diagnosis was BDD.

Twenty-eight potential participants were referred for the BDD group in the study. One participant withdrew prior to the interview, saying she 'did not feel up to it'. Twenty-seven agreed to participate, but 5 of those did not return questionnaires after the interview, in spite of telephone calls and reminder letters. The remaining 22 participants completed all parts of the study and examination of their BDDQ-R, BSI and 'Personal Details Questionnaire' responses gave no rise for concern regarding the violation of inclusion or exclusion criteria.

2.1.2) Control Participants

Control participants with 'normal concerns' regarding appearance were recruited[7] from gyms, beauty salons and health clubs in London. There is little precedence in the literature on BDD for devising inclusion criteria for comparison groups. Following consultation with a number of researchers and clinicians working with people with BDD[8], selected items from the BDDQ-R were used to screen potential participants. These items were used to ensure that control participants did not meet diagnostic criteria for BDD, but were nevertheless sufficiently concerned about appearance to constitute a reasonably conservative comparison group. It was decided to include only those participants who rated themselves either 'somewhat' or 'moderately' concerned and preoccupied with particular features of appearance. Furthermore, anyone stating that they were preoccupied with their appearance for more than 1 hour per day was excluded. Responses to an item regarding current and past psychiatric diagnoses on the 'Personal Details' questionnaire were examined to ensure that participants with any current psychiatric diagnosis or history of an eating disorder were also excluded. It is important to note that these criteria are somewhat conservative.

Thirty-three potential control participants expressed interest in the study and completed the consent form, BDDQ-R and 'Personal Details' questionnaires. Of these 33, 11 were excluded prior to the interview: 4 for scoring too highly on the 2 screening items of the

[7] See page 100 for further details of the recruitment procedure.

[8] This consultation comprised individual meetings with lead clinicians and presentation and discussion of the research proposal at a quarterly meeting of UK-based BDD researchers.

BDDQ-R; 3 because their level of spoken English was judged to be insufficient for reliable responding to interview questions; and 4 because they scored too low on the 2 screening items of the BDDQ-R.

2.2) Measures

2.2.1) Self-report Questionnaires

2.2.1.1) Personal Details Questionnaire (see Appendix 2)

Participants were asked to provide details regarding date of birth, level of education, ethnicity and first language. They were also asked to provide information regarding any present or past mental health problems or psychiatric diagnoses.

2.2.1.2) Body Dysmorphic Disorder Questionnaire - Revised (BDDQ-R; Phillips, 2003) (see Appendix 1)

The BDDQ-R comprises 9 questions, 7 of which are rated on 5 point Likert scales. Those 7 questions include level of concern, level of preoccupation, associated distress, impact on functioning and avoidance. The remaining 2 enquire about the length time spent preoccupied with appearance each day and the number of times the person checks his or her appearance per day. The BDDQ-R is a revised version of the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, Atala and Pope, 1995) and both

are based on the DSM-IV criteria for Body Dysmorphic Disorder. The psychometric properties of the BDDQ were studied in psychiatric in-patients and the measure was found to have a sensitivity of 100 percent and a specificity of 92.5 percent (Grant, Kim and Crow, 2001). The psychometric properties of the BDDQ-R have not yet been studied.

2.2.1.3) Beck Depression Inventory-II (BDI-II; Beck, Steer and Brown, 1996)

The BDI-II comprises 21 items, each of which corresponds to a symptom of depression. Each item is rated on a 4 point scale and scores on the 21 items are summed, with higher total scores indicating higher symptomatology. A total score of 0 to 13 is considered to fall in the 'minimal range', 14 to 19 is classified 'mild', 20 to 28 is 'moderate', and 29 to 63 is 'severe'. In terms of psychometrics, the BDI-II has been found to have good reliability and validity.

2.2.1.4) Hospital Anxiety and Depression Scale (HADS; Zigmund and Snaith, 1983)

The HADS is a 14 item questionnaire, with each item rated on a 4 point Likert scale. The HADS comprises 2 subscales (anxiety and depression) and it is possible to score a maximum of 21 points per subscale. Scores of 0 to 7 are considered 'normal', scores of 8 to 10 are regarded to be 'borderline' and scores of 11 and above are thought to indicate clinical caseness (11-14 = 'moderate' anxiety or depression; 15-21 = 'severe' anxiety or depression). The HADS is widely used in both research and clinical contexts

and has been shown to have good reliability and validity.

2.2.1.5) Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger and Borkovec, 1990)

The PSWQ is a 16-item measure, designed to assess tendency to worry in general, rather than worrying about specific topics. Items are rated on 5 point Likert scales. Good reliability and validity have been demonstrated in clinical and non-clinical samples (e.g. Brown, Antony and Barlow, 1992).

2.2.1.6) Body Image Quality of Life Inventory (BIQLI; Cash and Fleming, 2002)

This measure was developed to assess the positive and negative effects of one's body image on 19 aspects of social functioning and well-being. Each of the 19 items are rated on a 7 point Likert scale and an overall mean score is calculated for each participant. This scale has been shown to have good internal consistency, test-retest reliability and convergent validity.

2.2.1.7) Brief Symptom Inventory (BSI; Derogatis, 1975)

The BSI comprises 53 items, which fall into 10 sub-scales, each assessing a different aspect of psychiatric symptomatology. Following research convention, the so-called Global Severity Index was calculated, which is an index of overall psychological

distress. The reliability and validity of the BSI have been shown to be good and the instrument has been tested in over 400 research studies (Pearson Assessments, 2005).

2.2.1.8) The Metacognitions Questionnaire (MCQ; Cartwright-Hatton and Wells, 1997) (see Appendix 3)

The MCQ was developed to assess positive and negative metacognitive beliefs regarding worry and intrusive thoughts, in addition to metacognitive monitoring and cognitive efficiency. The 65 items, rated on 4 point Likert scales, were derived from transcripts of interviews with students and therapy sessions for people with anxiety. Factor analysis elicited 5 factors: positive beliefs; negative beliefs (uncontrollability and danger); cognitive confidence; negative beliefs (superstition, punishment, responsibility and control); and cognitive self-consciousness The internal consistencies (Cronbach's alpha) of each of the five factors have been shown to range from 0.72 to 0.87, while test-retest reliability coefficients range from 0.76 to 0.89. Participants were asked to interpret all items to refer to thoughts about appearance only, rather than other thoughts and worries.

2.2.1.9) The Thought Control Questionnaire (TCQ; Wells and Davies, 1994) (see Appendix 4)

The TCQ was developed from interviews from people with anxiety disorders and non-clinical participants to assess the frequency of use of different types of thought control

strategy. The measure comprises 30 items, with 6 items in each of the 5 strategy type subscales (distraction, social control, worry, punishment and re-appraisal). Items are rated on 4 point Likert scales. The internal consistencies (alpha) of each of the 5 factors have been shown to range from 0.64 to 0.79, while test-retest reliabilities range from 0.67 to 0.83. Participants were asked to interpret all items to refer to thoughts about appearance only, rather than other thoughts and worries.

2.2.2) Interview Schedule (abbreviated version) (see Appendix 5)

The material reported in this study is from an abbreviated version of the original interview schedule. Material from the full interview schedule not included here will be reported elsewhere.

The schedule, comprising open questions, probe questions and ratings, was developed with the aim of systematically describing the preoccupation in BDD and exploring metacognitive aspects of that preoccupation. The researcher aimed to ensure that the interview was grounded in a theoretical framework, but also allowed for the capture of novel material. This approach has been used to capture features of anxious thinking related to intrusive thoughts, OCD and worry (e.g. Ladouceur et al., 2000) and has been found to be particularly appropriate where there are existing models and preliminary data, but the detailed phenomenology is unknown.

Relevant literature and existing measures were examined to determine the key

2.2.2.2) Interview Section 2: Associated negative affect and impact on functioning.

Associated negative affect (sadness; anxiety; guilt; anger; fear; and shame) was explored, using 5 point Likert rating scales. Participants were then asked to rate the impact of the preoccupation on 4 different aspects of functioning (family life; school / study / work; intimate relationships; and social life and leisure activities) using 5 point Likert rating scales.

2.2.2.3) Interview Section 3: Metacognitive beliefs

Metacognitive beliefs were explored using a series of open questions, regarding the advantages and disadvantages of the preoccupation, whether participants thought anything bad could happen if they were not preoccupied with appearance and what they imagined would happen if they abandoned all thought control attempts or were unable to control the preoccupation.

2.2.2.4) Interview Section 4: Thought control strategies

Participants were asked whether they use any mental strategies to try to control or cope with thoughts and images about appearance. An open question was then posed, asking them to describe these strategies. Responses were classified according to a scoring grid developed by the researcher, after consulting existing literature on other disorders and

clinicians working with people with BDD.

Next, participants were asked to rate on 4 point Likert rating scales how often they employ 4 predetermined strategies (mental cosmetic surgery, reviewing evidence, planning for the future, talking to others about non-appearance related topics). These 4 strategies were suggested by professionals working with people with BDD, to complement strategies listed in the TCQ.

Professionals working in BDD and anxiety disorders were consulted in order to arrive at a classification of coding grid strategy types, TCQ items and the 4 predetermined strategies as either 'enagagement' (the strategy employed engages with the thought or image) or 'avoidance' (the strategy employed avoids the thought or image) (see Appendix 6 for list of engagement and avoidance strategies). For each participant, the most frequently used 'engagement' and 'avoidance' strategies were identified. Three rating scale (5 point Likert) questions were posed regarding the effectiveness of each of the 2 strategies at reducing 3 dimensions of the thoughts about appearance (frequency, intensity, associated distress).

2.3) Procedure

2.3.1) Recruitment

2.3.1.1) Clinical Participants

Participants with BDD were informed of the study by their Consultant Psychiatrist and given the information sheet (see Appendix 9). With permission, the Consultant Psychiatrist then forwarded potential participants' contact details to the researcher. The researcher contacted potential participants by telephone, outlined the study, answered any questions and arranged a mutually convenient time to meet.

2.3.1.2) Control Participants

Leaflets and posters were placed in gyms, health clubs and beauty salons, with the agreement of the manager of each establishment. Potential participants contacted the researcher by telephone or email. After outlining the study and providing an opportunity for questions, the researcher sent potential participants the information sheet, consent form (see Appendix 10), BDDQ-R and 'Personal Details' questionnaire. Upon receipt of the completed documents, the researcher contacted participants by email or telephone and arranged a mutually convenient meeting time.

2.3.2) Interview appointment

At the beginning of the interview appointment, brief introductions were made, the aims and procedure of the study were explained by the researcher and participants were given the opportunity to ask questions.

The consent form, 'Personal Details' questionnaire and BDDQ-R were administered to participants in the BDD group. Control group participants had usually completed these before the meeting. Next, the BSI, BIQLI, BDI-II, HADS and PSWQ were completed by all participants.

Sections 1 to 3 ('Content of thoughts and images', 'Associated negative affect and impact of thoughts about appearance on functioning' and 'Metacognitive beliefs') of the interview schedule were administered. Participants then completed the MCQ, after which section 4.1 (open question regarding mental thought control strategies) of the interview was administered. The TCQ was then completed, followed by the remainder of section 4 (questions regarding the effectiveness of thought control strategies).

Participants were then debriefed, given the opportunity to ask further questions and thanked for their participation.

Interviews lasted between 30 minutes and 1 hour 50 minutes.

All interviews were audiotaped and relevant sections were then transcribed by the researcher.

2.4) Ethics

The necessary approval was obtained from the Barnet, Enfield and Haringey Mental Health NHS Trust Local Research Ethics Committee and the ethics committee of the specialist unit in North London (see Appendix 7).

3) Results

In order to ascertain whether parametric or non-parametric tests were most appropriate, the distributions of all variables for each group were examined for normality (skewness and kurtosis) at a significance level of 0.05. A number of variables were associated with significant skew and/or kurtosis (see Appendix 8). The histograms of those variables were examined to give further indication of the extent of non-normality. In light of the fact that parametric tests are reasonably robust to deviations from normality (see Howell, 1997) and the conservative approach adopted to other aspects of the analysis (see below), it was decided not to transform these variables.

Equality of Variance (Levene's Test of the Equality of Variances) was examined for all variables and in cases where the variances were found to be significantly different, 'equal variances not assumed' statistics were reported, wherever possible.

The analysis of the interview data is somewhat challenging, given the exploratory nature of the study. The potential for multiple hypothesis testing raises problems with Type I error. Furthermore, the selection of a relatively conservative control group might well have reduced the power of the study. The researcher acknowledges the potential problems associated with high rates of Type I error and the dangers of a non-conservative, post-hoc approach to data analysis. Therefore, a relatively conservative analysis strategy has been selected, aiming to increase power and decrease the number of tests, thereby achieving as optimal a balance as possible between Type I and Type II

error.

First, after examination of correlation matrices and Cronbach's alpha coefficients, items measuring aspects of a single broad phenomenon (e.g. thought content items; negative affect items; impact on functioning items; and items concerning effectiveness of thought control strategy at reducing various thought dimensions) were treated as repeated measures variables. It could be argued that it would have been more appropriate to consider these items additive scales, but this would have resulted in reduced power and precluded the examination of differences, where appropriate, for individual items. Treating such variables as repeated measures increases the denominator for comparative analyses, thereby increasing power. Second, tests of main or interaction effects were only conducted, if there was an a priori rationale (i.e. in many cases, only 1 of several potential tests of main effects was conducted), thereby minimising Type I error. Third, multiple analyses were conducted to test simple main effects, where appropriate.

Multiple analyses inevitably increase Type I error and there is much debate around this issue (see Feise, 2002). It could be argued that attempts to correct for this potential increase in Type I error rate are inappropriate for this data set for 2 reasons: attempts have already been made to protect against Type I error by treating aspects of broad phenomena as repeated measures variables, by testing for overall interactions and by ensuring that only tests of a priori hypotheses are conducted; and the inevitable increase in Type II error rates (if adjustments were made to control for Type I error) could be problematic, particularly given the relatively small sample sizes. One might equally

argue that a Bonferroni procedure is appropriate (Dunn, 1961), which corrects for increases in Type I error rate, by dividing the probability of a Type I error (alpha) by the number of comparisons made. Jaccard and Wan (1996) point out that this method of correcting for Type I error can become overly conservative. They suggest a modified Bonferroni procedure which keeps the overall Type I error rate per group of analyses at 5 percent, but uses rank ordering of significance levels. This method is less conservative than the standard Bonferroni method (see Simes, 1986). It would seem that this modified Bonferroni procedure represents a sensible compromise between ignoring potential increases in Type I error rate and being overly conservative and thereby increasing Type II error rate. Therefore, the modified Bonferroni procedure will be used to correct for multiple analyses where appropriate.

Responses to open questions on thoughts, metacognitive beliefs and thought control strategy types were classified according to coding grids developed by the researcher, after examination of relevant literature and consultation with clinicians working with people with BDD. Numbers and percentages of participants in each group who gave particular categories of response are reported. Each thought, belief or strategy type reported was assigned to just one category according to the researcher's judgement, as the assigning of items to multiple categories would be likely to result in unnecessary complexity. It was hoped that this approach would inform the assessment of the face validity of a priori response categories and capture experiences beyond the predetermined categories. Comparative analyses were not performed on this data, as the number of thought, belief or strategy categories reported by each person is partly

dependent on the wordiness of responses.

3.1) Sample Description

3.1.1) Demographics

Participants comprised 14 females and 8 males with BDD, and 14 females and 8 males with 'normal concerns' regarding appearance. The mean age of the participants with BDD was 33.91 years (standard deviation = 11.36), while the mean age of the 'normal concerns' participants was 25.55 years (standard deviation = 4.07).

The majority of participants in both groups identified as 'White - British' or 'White - Other' (17 participants in the BDD group (77.27%) and 16 in the control group (72.73%)). In the BDD group, 1 participant identified as 'Black - African' (4.55%), 1 as 'Asian - Other' (4.55%) and 3 as 'Other' (13.63%). In the 'normal concerns' group, 5 participants identified as 'Asian - British Pakistani', 'Asian - British Bangladeshi' or 'Asian - Other' (22.72%) and 1 participant identified as 'Other' (4.55%).

With regard to education level, participants were asked to identify the highest level of qualification they had. In the BDD group, 1 participant (4.55%) had no qualifications, 9 participants (40.91%) had attained GCSEs, 5 (22.72%) had A Levels, 6 (27.27%) had an Undergraduate degree and 1 (4.55%) a Postgraduate degree. In the 'normal concerns' group, 3 participants (13.64%) had attained A-Levels, 11 (50.00%) an Undergraduate

degree and 8 (36.36%) a Postgraduate degree.

Age and education level will be controlled for in all statistical analyses as it is possible that the group differences with respect to these variables could confound findings.

3.1.2) Clinical characteristics

With regard to clinical characteristics, the mean group scores (and standard deviations) on the following self-report measures are presented in Table 1: BDDQ-R; BIQLI; BSI; BDI-II; HADS (anxiety); HADS (depression); PSWQ.

Table 1: Mean (and standard deviations) scores for participants with BDD and control participants on self-report questionnaire measures

SCALE	BDD GROUP	CONTROL GROUP
BDDQ-R	29.36 (4.37)	13.23 (2.51)
BIQLI	-1.72 (0.63)	0.51 (1.06)
BDI-II	29.95 (11.55)	8.50 (8.07)
HADS (anxiety)	14.14 (3.62)	7.27 (3.49)
HADS (depression)	9.77 (4.67)	3.05 (3.26)
PSWQ	62.32 (15.09)	45.64 (10.42)
BSI	1.73 (0.70)	0.52 (0.40)

With regard to published norms, the BDD group mean score on the BDI-II falls within the 'severe depression' range, while the control group mean score is in the 'minimal' range. On the HADS anxiety scale, the BDD group mean score falls between 'moderate' and 'severe', while the control group mean score falls between 'normal' and 'borderline'. The BDD group mean score on the HADS depression scale is the 'borderline' range, while the control group mean score is in the 'normal' range.

Independent samples T tests were conducted in order to compare the 2 groups on these measures. Assumptions regarding equality of variance were met for all self-report questionnaire variables, except for BDDQ-R, BSI and PSWQ scores, for which the 'equal variances not assumed' statistics are reported. As outlined (see page 102), the modified Bonferroni procedure was used to adjust statistical significance cut-offs. The 2 t tests on BDD-related measures were considered to constitute 1 family of tests, while tests on measures relating to other symptoms were treated as a separate family of tests. Using this method, the differences in mean scores on all measures were found to be statistically significant, with the BDD group scoring significantly higher across all measures (see table 2 below). In spite of these findings, it was deemed inappropriate to include any of these scores as covariates in later analyses[10].

[10] See page 173 for discussion of this decision

Table 2: Results of independent samples t-tests (BDD vs. control group) on self-report questionnaire measures

SCALE	t	DEGREES OF FREEDOM	SIGNIFICANCE (2 - TAILED)
BDDQ-R	15.02	33.46	<0.001
BIQLI	-8.42	42	<0.001
BDI-II	7.14	42	<0.001
HADS (anxiety)	6.38	42	<0.001
HADS (depression)	5.54	42	<0.001
PSWQ	4.27	37.32	<0.001
BSI	7.03	33.61	<0.001

3.2) Cognitive Processes and Metacognition

3.2.1) Thought content

3.2.1.i) Descriptive data

All participants reported experiencing thoughts about appearance. Responses to the open question regarding the content of those thoughts were coded according to a coding grid developed by the researcher, after consulting clinicians working with people with BDD (see table 3 below). Some participants reported several different thoughts that were assigned to different thematic categories, while other participants reported several different thoughts belonging to the same category. Each thought was assigned to one category only, according to the researcher's judgement, as the assigning of thoughts to multiple categories would be likely to result in unnecessary complexity. Comparative analyses were not performed on this data, as the number of thought categories reported by each participant is partly dependent on the wordiness and complexity of responses and the total number of thoughts reported. The numbers (and percentages) of participants in each group spontaneously reporting the different types of thought content are given in Table 3 below.

Table 3: Number of participants (and percentages of each group) spontaneously reporting thoughts in each category

THOUGHT CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 44)
Critical/self-attacking thoughts	21 (95.45)	9 (40.91)	30 (68.18)
Past-oriented thoughts	3 (13.64)	8 (36.36)	11 (25.00)
Thoughts about what other people might think	13 (59.09)	5 (22.73)	18 (40.91)
Worries regarding the future	5 (22.73)	3 (13.64)	8 (18.18)
Comparing thoughts	4 (18.18)	7 (31.82)	11 (25.00)
Planning ways to change one's appearance	5 (22.73)	6 (27.27)	11 (25.00)
Other	4 (18.18)	0 (0.00)	4 (9.09)

All participants reported at least 1 thought that was classifiable according to the coding grid. Of the 93 thoughts volunteered, only 4 thoughts, reported by 4 different participants with BDD, were not classified in any of the 6 predetermined categories. One of these thoughts was command-like thoughts in the second person ('You must pick your skin'), while another related to uncertainty regarding appearance ('I just dwell for hours on the fact that I'm not sure how I look... the uncertainty is unbearable... it stays on my mind for hours... I ask myself constantly whether I look as bad as I sometimes think I do...'). The other 2 related to physical sensations ('...a tingling in the left side of my face' and 'One side feels physically heavier and it's so discomforting...').

3.2.1.ii) Quantitative data

Participants were asked to rate how often they experience each of the 6 types of thoughts about appearance[11].

In order to test hypothesis 1 (that there would be no significant difference between people with BDD and people with 'normal concerns' about appearance with regard to whether they do or do not experience 6 predetermined content-related categories of thoughts about appearance), frequency ratings of the 6 thought categories were collapsed into binomial data (presence or absence of appearance-related thoughts in each category) (see Table 4 below)

[11] The 6 types of thought were: self-critical/attacking, past-oriented, thoughts about what others might think, worries regarding the future, comparing thoughts and planning ways to change one's appearance.

Table 4: Numbers of participants in each group reporting presence or absence of appearance-related thoughts in each category.

	BDD GROUP (N=22)		CONTROL GROUP (N=22)		BOTH GROUPS (N=44)	
THOUGHT TYPE	**PRESENT**	**ABSENT**	**PRESENT**	**ABSENT**	**PRESENT**	**ABSENT**
Critical/self-attacking thoughts	21	1	22	0	43	1
Past-oriented thoughts	20	2	20	2	40	4
Thoughts about what other people might think	22	0	21	1	43	1
Worries regarding the future	22	0	16	6	38	6
Comparing thoughts	22	0	21	1	43	1
Planning ways to change one's appearance	19	3	22	0	41	3

After examining this data, Chi-squared tests were conducted for future-oriented thoughts and planning to change one's appearance only. The results of these tests are displayed in table 5 below.

Table 5: Results of chi-squared tests to compare the 2 groups with regard to presence or absence of appearance-related thoughts in each category

THOUGHT CATEGORY	CHI SQUARED	DEGREES OF FREEDOM	SIGNIFICANCE
Future-oriented thoughts	6.947	1	0.008
Planning ways to change one's appearance	3.220	1	0.073

A statistically significant difference between the 2 groups was found for future oriented thoughts only, where participants in the BDD group were significantly more likely to report the presence of such thoughts than the control group ($\chi_2(1) = 6.947$, $p = 0.008$).

3.2.2) Frequency ratings of thoughts about appearance

In order to test subsidiary hypothesis 6 (that people with BDD, compared to people with 'normal concerns' about appearance, would report experiencing significantly more frequent thoughts in the 6 content-related categories of thoughts about appearance), mean ratings of frequency of thought type were compared using an ANCOVA.

There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 1 within-participants factor (thought type) with 6 levels (critical/self-attacking thoughts; past-focussed thoughts; thoughts about what other people might think; future-oriented worries; comparing thoughts; and plans to change appearance). Covariates were education level (1-5) and age (years).

Estimated marginal means (and standard error) (after partialling out education and age) for frequency of 6 predetermined thought types are given in table 6.

Table 6: Table to show estimated marginal means (and standard error) (after partialling out education and age) for frequency of 6 predetermined thought types

THOUGHT CATEGORY	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Critical/self-attacking thoughts	3.203 (0.263)	1.570 (0.263)	2.386 (0.157)
Past-oriented thoughts	1.745 (0.258)	1.210 (0.258)	1.477 (0.153)
Thoughts about what others might think	2.666 (0.272)	2.107 (0.272)	2.386 (0.162)
Future-oriented thoughts	2.914 (0.229)	0.723 (0.229)	1.818 (0.136)
Comparing thoughts	2.957 (0.249)	2.089 (0.249)	2.523 (0.148)
Planning ways to change one's appearance	2.237 (0.272)	1.627 (0.272)	1.932 (0.162)

After controlling for age and level of education, a significant main effect of group was found ($F(1,40) = 25.052$, $p < 0.01$), confirming a priori predictions, that people with BDD would report higher overall frequency of thoughts regarding appearance than control participants. A significant interaction between group and thought type was found (Wilk's Lambda = 0.70, $F(5, 36) = 3.13$, $p = 0.02$). This was not predicted, and should therefore be considered cautiously. Nevertheless, consideration of the main effect of group in the context of an interaction can lead to a more specific interpretation of the main finding of higher frequency of thoughts about appearance in the BDD group.

Simple main effects of group were explored, by conducting uncorrected pairwise comparisons among estimated marginal means (after controlling for education and age), the results of which are reported in table 7 below. On average, the BDD group reported higher frequency of all types of appearance-related thoughts than the control group. After Bonferroni adjustments, only the group differences for critical/self-attacking thoughts and future-oriented thoughts reached statistical significance. The difference for critical/self-attacking thoughts was associated with a small effect size, while that for future-oriented thoughts was associated with a medium effect size (see Cohen, 1988).

Table 7: Results of uncorrected pairwise comparisons among estimated marginal mean frequency ratings of different types of thoughts about appearance (after controlling for age and education)

THOUGHT TYPE	BDD group mean - Control group mean	Standa -rd Error	t	Significan -ce (p)	Estimated effect size (partial eta squared)	Observed power
Critical / self-attacking thoughts	1.632	0.423	3.855	<0.001	0.271	0.964
Past-oriented thoughts	0.535	0.414	1.293	0.204	0.040	0.243
Thoughts about what other people might think	0.558	0.437	1.277	0.209	0.039	0.238
Future-oriented thoughts	2.191	0.367	5.965	<0.001	0.471	1.000
Comparing thoughts	0.868	0.399	2.174	0.036	0.106	0.564
Thoughts about planning to change one's appearance	0.609	0.438	1.392	0.172	0.046	0.274

3.2.3) Metacognitive beliefs

3.2.3.i) Descriptive Data

Responses to the open questions regarding beliefs about thoughts about appearance were thematically coded according to coding grids developed by the researcher, following consultation with clinicians working with people with BDD and examination of literature on metacognitive beliefs in other disorders. Each belief reported was assigned to just 1 category according to the researcher's judgement, as the assigning of a single belief to multiple categories would be likely to result in unnecessary complexity. Some people reported a number of beliefs that were assigned to different categories, while others reported several beliefs that were assigned to one category. The numbers (and percentages) of participants in each group reporting the different types of thematic content are given in tables 11, 12, 13 and 14 below.

3.2.3.i.a) Advantages and gains of preoccupation with thoughts about appearance

Twelve of the 22 BDD group participants and 20 of the 22 control group participants reported advantages or gains of being preoccupied with appearance. Those that were classifiable according to the coding grid are included in table 11 below. One thematic category was found to be redundant (coming to terms with difficulties). Four advantages, reported by 4 different BDD group participants were deemed unclassifiable according to the scoring grid (2 participants spoke about being able to focus more on

oneself, 1 participant said, 'I've got better at multi-tasking' and 1 further participant reported, 'It has made me pay more attention to detail generally').

Table 11: Number of participants (and percentages of each group) reporting advantages, classifiable according to the coding grid, in response to the question 'What are the advantages of being preoccupied with thoughts about appearance? / What do you gain by being preoccupied with thoughts about appearance?'

THEMATIC CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 44)
Empathy for others	1 (4.55)	1 (4.55)	2 (4.55)
Insight / self-awareness	1 (4.55)	2 (9.09)	3 (13.64)
Avoidance of other worries or social intimacy	5 (22.73)	0 (0.00)	5 (11.36)
Motivation to improve appearance	4 (18.18)	18 (81.82)	22 (50.00)
Coming to terms with difficulties	0 (0.00)	0 (0.00)	0 (0.00)
Other	4 (18.18)	0 (0.00)	4 (9.09)

3.2.3.i.b) Disadvantages of preoccupation with appearance

All participants, except for 4 from the control group, reported disadvantages of being preoccupied with thoughts about appearance. All those disadvantages which were classifiable according to the scoring grid are included in table 12 below. Three participants with BDD and 2 control participants reported disadvantages pertaining to being unable to think about other issues, which had not been included as a coding grid category. One BDD participant reported a disadvantage which was deemed unclassifiable according to the coding grid: 'Judging myself harshly all the time'. Four control participants reported unclassifiable disadvantages: 'I miss out on eating what I want to'; 'Paranoia'; 'I think that by worrying about my skin... it makes the acne worse, because of the stress hormones'; and 'Sometimes I become crazy with stress regiments, for example I decide to work out for 3 hours non stop and then I burn out completely'.

Table 9: Number of participants (and percentages of each group) reporting disadvantages, classifiable according to the thematic category coding grid, in response to the question, 'What are the disadvantages of being preoccupied with thoughts about appearance?'

THEMATIC CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 44)
Increases low mood and / or anxiety	4 (18.18)	6 (27.27)	10 (22.73)
Wastes time	4 (18.18)	5 (22.73)	9 (20.45)
Negative impact on social life and relationships	13 (59.09)	3 (13.64)	16 (36.36)
Negative impact on career	4 (18.18)	0 (0.00)	4 (9.09)
Other	3 (13.64)	6 (27.27)	9 (20.45)

3.2.3.i.c) Negative consequences of giving up being preoccupied with thoughts about appearance

Four participants with BDD and 2 control participants reported that they could not imagine not being preoccupied with appearance and therefore did not know if anything bad could happen. Nineteen participants (9 from the control group and 10 from the BDD group said that nothing bad could happen if they gave up being preoccupied with appearance and/or gave positive outcomes only. All remaining participants (8 with BDD and 11 controls) reported negative consequences and those which were classifiable according to the scoring grid are included in table 13 below. Two participants with BDD gave responses which were deemed unclassifiable ('I would be more arrogant if I wasn't preoccupied' and 'I think I'd be very confused... I've developed an identity as an ugly man who is preoccupied with thoughts about appearance... I don't know who I'd be').

Table 10: Number of participants (and percentages of each group) reporting beliefs, classifiable according to a category coding grid, in response to the question, 'Could anything bad happen if you gave up being preoccupied with appearance?'

THEMATIC CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 22)
Physical health would suffer	0 (0.00)	5 (22.73)	5 (11.36)
Appearance would suffer	6 (27.27)	5 (22.73)	11 (25.00)
Become preoccupied with other concerns, not related to appearance	0 (0.00)	1 (4.55)	1 (2.27)
Other	2 (9.09)	0 (0.00)	2 (4.54)

3.2.3.i.d) Consequences of lack of control over thoughts about appearance

All participants reported at least 1 belief regarding possible negative consequences of remaining preoccupied with or being unable to control thoughts about appearance. Those beliefs that were classifiable according to the coding grid are included in table 14 below. One category was found to be redundant (negative impact on physical health). Nine beliefs were deemed unclassifiable (1 BDD group participant stated, 'The marks would get worse, it I don't worry about them constantly they will just get worse and worse'; another BDD group participant made a statement which was too vague to categorise, 'It would be purgatory... very very difficult... unbearable'; 2 control group participants stated that they would resort to cosmetic surgery; 1 control group participant believed she would develop an eating disorder; 1 control group participant thought he would start eating too much and be unable to control his food intake; and 2 BDD group participants and 1 control group participant believed that the preoccupation would become worse).

Table 11: Number of participants (and percentages of each group) reporting beliefs, classifiable according to the coding grid, in response to the question 'What would happen if you were to let yourself remain preoccupied with or were unable to control thoughts about appearance?'.

THEMATIC CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 44)
Go crazy / mad / end up in a psychiatric hospital	6 (27.27)	1 (4.55)	7 (15.91)
Be housebound	4 (18.18)	1 (4.55)	5 (11.36)
Depression	4 (18.18)	5 (22.73)	9 (20.45)
Try to kill self	4 (18.18)	0 (0.00)	4 (9.09)
Job / career would suffer	0 (0.00)	7 (31.82)	7 (15.91)
Lose confidence / self esteem	0 (0.00)	7 (31.82)	7 (15.91)
Negative impact on social life / relationships	2 (9.09)	5 (22.73)	7 (15.91)
Negative impact on physical health	0 (0.00)	0 (0.00)	0 (0.00)
Other	4 (18.18)	5 (22.73)	9 (20.45)

3.2.3.ii) Quantitative data (MCQ)

In order to test hypothesis 2 (that people with BDD, compared to people with 'normal concerns' about appearance, will endorse both positive and negative metacognitive beliefs significantly more strongly), mean ratings of strength of belief on MCQ subscales were compared using an ANCOVA. There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 1 within-participants factor (MCQ) with 5 levels (positive metacognitive beliefs, beliefs regarding the danger and uncontrollability of thoughts; beliefs about cognitive competence; metacognitive beliefs regarding punishment, superstition and responsibility; and cognitive self-consciousness). Covariates were education level (1-5) and age (years). Estimated marginal means (and standard error) (after partialling out education and age) for strength of belief in MCQ subscales are given in table 15.

Table 12: Estimated marginal means (and standard error) (after partialling out education and age) for strength of belief on MCQ subscales

SUBSCALE	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Positive worry beliefs	1.763 (0.133)	1.914 (0.133)	1.838 (0.079)
Beliefs about uncontrollability & danger of thoughts	3.142 (0.174)	1.594 (0.174)	2.368 (0.104)
Beliefs about cognitive competence	2.061 (0.191)	1.603 (0.191)	1.832 (0.114)
Beliefs about responsibility, superstition & punishment	2.468 (0.118)	1.396 (0.118)	1.932 (0.070)
Cognitive self-consciousness	3.136 (0.176)	2.299 (0.176)	2.718 (0.104)

After controlling for age and education level, a significant main effect of group was found ($F(1,40) = 17.126$, $p < 0.001$), indicating that people with BDD reported higher overall belief in MCQ subscale items than control participants. A significant interaction between group and MCQ subscales was found (Wilk's Lambda = 0.485, $F(4,37) = 9.837$, $p = <0.001$). This was not predicted, and should therefore be considered cautiously. Nevertheless, consideration of the main effect of group in the context of an interaction can lead to a more specific interpretation of the overall finding of higher strength of belief in MCQ subscale items in the BDD group.

Simple main effects of group were explored, by conducting uncorrected pairwise comparisons among estimated marginal means (after controlling for education and age), the results of which are reported in table 16 below. Comparisons were conducted for 3 of the 5 MCQ subscales only (positive worry beliefs, negative beliefs about uncontrollability and the danger of thoughts and negative beliefs about responsibility, superstition and punishment), in order to limit tests to a priori hypotheses. Although the other subscales are intended to measure metacognition, a critique of these subscales will follow[12]. In comparison with control group participants, the BDD group participants reported higher mean strength of belief on both negative belief subscales and lower mean strength of belief for positive beliefs about worry. After Bonferroni adjustments, differences between mean group ratings of strength of belief reached statistical significance for the 2 negative belief subscales ($p < 0.001$), but not for the positive belief subscale ($p = 0.483$). Both negative belief subscales were associated with effect sizes approaching medium (Cohen, 1988)

Table 13: Results of uncorrected pairwise comparisons among estimated marginal means for strength of belief (after controlling for age and education)

MCQ SUBSCALE	BDD group mean - Control group mean	Standard Error	t	Significance (p)	Estimated effect size (partial eta squared)	Observed power
Positive worry beliefs	-0.151	0.214	-0.708	0.483	0.012	0.106
Negative beliefs about uncontrollability & danger of thoughts	1.548	0.280	5.519	<0.001	0.432	1.000
Negative beliefs about responsibility, superstition & punishment	1.072	0.189	5.656	<0.001	0.444	1.000

[12] See page 163

3.2.4) Thought control strategies

3.2.4.i) Descriptive Data

All participants reported employing mental thought control strategies in response to thoughts about appearance. Responses to the ensuing open question asking participants to describe those strategies were coded according to a coding grid, developed by the researcher, after examination of relevant literature on other disorders and consultation with clinicians working with people with BDD. Some participants reported several strategies which were assigned to different categories, while other participants reported several strategies which were assigned to the same thematic category. Each spontaneously reported strategy was assigned to 1 category only, according to the judgement of the researcher, as the assigning of strategies to multiple categories would be likely to result in unnecessary complexity. The numbers (and percentages) of participants in each group spontaneously reporting the different types of thought control strategies are given in Table 17 below.

Table 14: Number of participants (and percentages of each group) spontaneously reporting thought control strategies that were classifiable according to the category coding grid

THOUGHT CONTROL STRATEGY CATEGORY	BDD GROUP (N = 22)	CONTROL GROUP (N = 22)	BOTH GROUPS (N = 44)
Talk to other people about unrelated topics	2 (9.09)	2 (9.09)	4 (9.09)
Mental cosmetic surgery (imagining what would look like without perceived defect)	0 (0.00)	4 (18.18)	4 (9.09)
Tell self not to be silly or stupid	2 (9.09)	1 (4.55)	3 (6.82)
Seek reassurance from other people about appearance	1 (4.55)	1 (4.55)	2 (4.55)
Convincing self appearance is unimportant	1 (4.55)	7 (31.82)	8 (18.18)
Analysing reasons for having the thought	3 (13.64)	0 (0.00)	3 (6.82)
Tell self to stop thinking about it	1 (4.55)	3 (13.64)	4 (9.09)
Think about something else	9 (40.91)	9 (40.91)	18 (40.91)
Rationalise thoughts	9 (40.91)	13 (59.09)	22 (50.00)
Review evidence	2 (9.09)	2 (9.09)	4 (9.09)
Planning for the future	1 (4.55)	5 (22.73)	6 (13.64)
Ask people if they have similar thoughts	0 (0.00)	0 (0.00)	0 (0.00)
Other	10 (45.45)	9 (40.91)	19 (43.18)

One coding category was found to be redundant (asking others if they have similar thoughts). Five mental thought control strategies were not classifiable in any of the 13 categories of the coding grid. Three of these (reported by 3 different control group participants) involved telling oneself there is nothing one can do about the appearance feature. The remaining 2 were reported by the same BDD group participant: 'I use physical compulsions to get rid of the thoughts about appearance'; and 'I tell myself I must resist the compulsions again and again. Saying these words seems to fill up my mind for a while and I don't have to think about the initial worry... until I give in of course'. Nine people with BDD and 6 control participants reported engaging in a physical activity. These were not judged to be mental thought control strategies and were therefore excluded.

3.2.4.ii) Quantitative Data

3.2.4.ii.a) TCQ

In order to test the hypothesis that there would be significant differences between people with BDD and people with 'normal concerns' about appearance, with regard to frequency of use of different types of thought control strategy, mean ratings of frequency of strategy use on TCQ subscales were compared using an ANCOVA. There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 1 within-participants factor (TCQ) with 5 levels (distraction; punishment; reappraisal; worry; and social control). Covariates were education level (1-5) and age (years).

Estimated marginal means (and standard error) (after partialling out education and age) for frequency of strategy use on TCQ subscales are given in table 18.

Table 15: Estimated marginal means (and standard error) (after partialling out education and age) for frequency of strategy use on TCQ subscales

TCQ SUBSCALE	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Distraction	1.926 (0.135)	2.286 (0.135)	2.106 (0.080)
Punishment	1.834 (0.117)	1.302 (0.117)	1.568 (0.070)
Reappraisal	2.313 (0.143)	1.823 (0.143)	2.068 (0.085)
Worry	1.720 (0.100)	1.371 (0.100)	1.546 (0.060)
Social Control	1.517 (0.169)	2.414 (0.169)	1.966 (0.100)

After controlling for age and education level, a significant interaction between group and TCQ subscale was found (Wilk's Lambda = 1.008, F (4,37) = 9.322, p = <0.001) confirming a priori predictions that there would be significant differences between people with BDD and people with 'normal concerns' about appearance, with regard to frequency of use of different types of thought control strategy. In order to explore simple main effects, uncorrected pairwise comparisons were conducted among estimated marginal means (after controlling for education and age), the results of which are reported in table 19 below. In comparison to the control group, the BDD group participants reported higher mean frequency of strategy use on all TCQ subscales, except for distraction and social control. After Bonferroni adjustments, differences in group mean ratings of frequency of strategy use reached statistical significance for social control (p = 0.002) and punishment (p = 0.007) subscales only. Differences on both social control and punishment subscales are associated with small effect sizes (Cohen, 1988).

Table 16: Results of uncorrected pairwise comparisons among estimated marginal means for frequency of strategy use on TCQ subscales (after controlling for age and education)

TCQ SUBSCALE	BDD group mean - Control group mean	Standard Error	t	Significance (p)	Estimated effect size (partial eta squared)	Observed power
Distraction	-0.360	0.217	-1.662	0.104	0.065	0.368
Punishment	0.532	0.188	2.831	0.007	0.167	0.789
Reappraisal	0.450	0.230	2.136	0.039	0.102	0.550
Worry	0.349	0.162	2.162	0.037	0.105	0.559
Social Control	-0.897	0.271	-3.304	0.002	0.214	0.897

3.2.4.ii.b) Effectiveness of most frequently employed engagement and avoidance thought control strategies

Professionals working in BDD and anxiety disorders were consulted in order to arrive at a classification of TCQ items and the researcher's 4 predetermined strategies as either 'enagagement' (the strategy employed engages with the thought or image) or 'avoidance' (the strategy employed avoids the thought or image). The list of strategies categorised as engagement and avoidance by professionals working in BDD and anxiety disorders is included in Appendix 6. The most frequent 'engagement' and 'avoidance' strategies for each participant were identified (see tables 20 and 21 below).

Table 17: Number (and percentage) of participants in each group whose most frequently employed avoidance strategy was classified in each strategy category

Thought Control Strategy Category	BDD	Control	Both groups
Dwell on other worries / worry about more minor things	10 (45.45)	8 (36.36)	18 (81.82)
Think pleasant thoughts instead	2 (9.09)	11 (50.00)	13 (29.55)
Focus on different negative thoughts / replace the thought with a more trivial bad thought	3 (13.64)	0 (0.00)	3 (6.82)
Talk to people about topics unrelated to appearance	3 (13.64)	0 (0.00)	3 (6.82)
Call to mind positive images instead	4 (18.18)	3 (13.64)	7 (15.91)
TOTAL	22 (100.00)	22 (100.00)	44 (100.00)

Table 18: Numbers (and percentage) of participants in each group whose most frequently employed engagement strategy was classified in each strategy category

Thought Control Strategy	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Challenge the thought's validity	4 (18.18)	2 (9.09)	6 (13.64)
Question the reasons for having the thought	5 (22.73)	3 (13.64)	8 (18.18)
Review evidence	2 (9.09)	2 (9.09)	4 (9.09)
Analyse the thought rationally	3 (13.64)	12 (54.55)	15 (34.09)
Reinterpret the thought	3 (13.64)	0 (0.00)	3 (6.82)
I try a different way of thinking about it	1 (4.55)	0 (0.00)	1 (2.27)
Mental cosmetic surgery	2 (9.09)	1 (4.55)	3 (6.82)
Planning	2 (9.09)	2 (9.09)	4 (18.18)
TOTAL	22 (100.00)	22 (100.00)	44 (100.00)

Mean group ratings of the effectiveness of each participant's most frequently employed avoidance and engagement thought control strategies on dimensions of thoughts about appearance were compared using an ANCOVA, in order to test the following hypotheses:

4) that, compared to people with 'normal concerns', people with BDD would report significantly lower effectiveness of their 2 most frequently employed strategies (1 involving avoidance of thoughts and 1 involving engagement with thoughts) at reducing the frequency, intensity and distress associated with thoughts about appearance.

5) that the most frequently employed engagement strategy would be rated significantly more effective than the most frequently employed avoidance strategy, at reducing the frequency, intensity and distress associated with thoughts about appearance, regardless of group.

There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 2 within-participants factors (1 (strategy type) with 2 levels (avoidance; engagement) and 1 (thought dimension) with 3 levels (frequency; intensity; distress)). Co-variates were age (years) and level of education (1-5).

Estimated marginal means (and standard error) (after partialling out education and age) are given in table 22 below.

Table 19: Estimated marginal means (and standard error) (after partialling out education and age) of ratings of effectiveness of most frequently employed avoidance strategy and engagement strategy at reducing 3 dimensions of thoughts about appearance (frequency, intensity and distress)

	THOUGHT DIMENSION	BDD GROUP	CONTROL GROUP	BOTH GROUPS
AVOIDANCF STRATEGY	Frequency	1.147 (0.269)	2.580 (0.269)	1.864 (0.160)
	Intensity	1.544 (0.271)	2.729 (0.271)	2.136 (0.161)
	Distress	1.127 (0.299)	2.691 (0.299)	1.909 (0.178)
	Overall effectiveness	1.273 (0.242)	2.667 (0.242)	1.970 (0.144)
ENGAGEMENT STRATEGY	Frequency	0.620 (0.263)	2.471 (0.263)	1.545 (0.156)
	Intensity	1.200 (0.265)	2.754 (0.265)	1.977 (0.158)
	Distress	1.115 (0.222)	2.931 (0.222)	2.023 (0.132)
	Overall effectiveness	0.978 (0.218)	2.719 (0.218)	1.848 (0.130)

After controlling for age and level of education, a significant main effect of group was found ($F(1,40) = 30.351$, $p < 0.01$), confirming the a priori prediction (hypothesis 7), that people with BDD would report significantly lower overall effectiveness of their most frequently employed avoidance and engagement strategies, than control participants. After controlling for age and level of education, no significant main effect of strategy type was found ($F(1,40) = 0.479$, $p = 0.493$). Therefore, the a priori prediction (hypothesis 8), that the most frequently employed engagement strategy would be significantly more effective than the most frequently employed avoidance strategy, at reducing the frequency, intensity and distress associated with thoughts about appearance was not confirmed.

3.2.5) Associated Affect

In order to test subsidiary hypothesis 7 (that people with BDD, compared to people with 'normal concerns' about appearance, will report significantly greater negative affect associated with thoughts about appearance), mean group ratings of strength of negative affect were compared using an ANCOVA. There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 1 within-participants factor (type of negative affect) with 6 levels (sadness; anxiety; guilt; anger; fear; shame). Covariates were education level (1-5) and age (years). Estimated marginal means (and standard error) (after partialling out education and age) for strength of the 6 types of negative affect are given in table 8.

Table 20: Estimated marginal means (and standard error) (after partialling out education and age) for strength of 6 types of negative affect

TYPE OF NEGATIVE AFFECT	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Sadness	3.306 (0.220)	1.058 (0.220)	2.182 (0.131)
Anxiety	2.997 (0.267)	1.023 (0.267)	2.000 (0.159)
Guilt	1.973 (0.311)	1.027 (0.311)	1.500 (0.185)
Anger	2.254 (0.354)	0.837 (0.354)	1.545 (0.211)
Fear	2.552 (0.247)	0.160 (0.247)	1.341 (0.147)
Shame	3.133 (0.222)	0.548 (0.222)	1.841 (0.132)

After controlling for age and education level, a significant main effect of group was found ($F(1,40) = 41.447$, $p < 0.001$), confirming a priori predictions, that people with BDD would report higher overall strength of negative affect than control participants. A significant interaction between group and type of negative affect was found (Wilk's Lambda = 0.662, $F(5, 36) = 3.674$, $p = 0.009$). This was not predicted, and should therefore be considered cautiously. Nonetheless, consideration of the main effect of group in the context of an interaction can lead to a more specific interpretation of the overall finding of higher strength of negative affect associated with thoughts about appearance in the BDD group.

Simple main effects of group were explored, by conducting uncorrected pairwise comparisons among estimated marginal means (after controlling for education and age), the results of which are reported in table 9 below. On average, the BDD group reported higher strength of all types of negative affect associated with appearance-related thoughts than the control group. After Bonferroni adjustments, differences in group means for all types of negative affect reached statistical significance, except for guilt. The effect size for anger was small, that for anxiety was small to medium, while the effect sizes for sadness and fear were medium (Cohen, 1988).

Table 21: Results of uncorrected pairwise comparisons among estimated marginal means for strength of negative affect (after controlling for age and education)

NEGATIVE AFFECT TYPE	BDD group mean - Control group mean	Standard Error	t	Significance (p)	Estimated effect size (partial eta sqaured)	Observed power
Sadness	2.248	0.353	6.371	<0.001	0.504	1.000
Anxiety	1.954	0.429	4.556	<0.001	0.342	0.994
Guilt	0.945	0.500	1.893	0.066	0.082	0.455
Anger	1.417	0.569	2.491	0.017	0.134	0.681
Fear	2.362	0.397	5.946	<0.001	0.469	1.000
Shame	2.585	0.356	7.254	<0.001	0.568	1.000

3.2.6) Impact on functioning

In order to test subsidiary hypothesis 8 (that people with BDD, compared to people with 'normal concerns' about appearance, will report that thoughts about appearance have a significantly greater impact on functioning), mean group ratings of impact of thoughts on functioning were compared using an ANCOVA. There was 1 between-participants factor (group) with 2 levels (BDD group; control group) and 1 within-participants factor (aspect of functioning) with 4 levels (family life; school/study/work; intimate relationships; and social life and leisure activities). Covariates were education level (1-5) and age (years). Estimated marginal means (and standard error) (after partialling out education and age) for impact of thoughts about appearance on 4 aspects of functioning are given in table 10.

Table 22: Estimated marginal means (and standard error) (after partialling out education and age) for impact of thoughts about appearance on 4 aspects of functioning

ASPECT OF FUNCTIONING	BDD GROUP	CONTROL GROUP	BOTH GROUPS
Family life	1.741 (0.262)	0.259 (0.262)	1.000 (0.156)
School / study / work	2.285 (0.231)	0.488 (0.231)	1.386 (0.137)
Intimate relationships	3.057 (0.255)	0.716 (0.255)	1.886 (0.152)
Social life and leisure activities	2.508 (0.216)	0.719 (0.216)	1.614 (0.129)

After controlling for age and education level, a significant main effect of group was found ($F(1,40) = 44.78$, $p < 0.001$), confirming a priori predictions, that people with BDD would report higher impact of thoughts about appearance on functioning than control participants. No significant interaction between group and impact of thoughts about appearance on aspect of functioning was found (Wilk's Lambda = 0.948, $F(3, 38) = 0.698$, $p = 0.559$), indicating that it is not appropriate to explore simple main effects.

4) Discussion

4.1) Summary of key findings

This study aimed to investigate the content of appearance-related thoughts and associated metacognitive beliefs and thought control strategies in people with BDD and people with 'normal concerns' regarding appearance. The main findings of the study were:

1) As predicted, the content of thoughts about appearance was broadly similar in people with BDD and people with 'normal concerns' regarding appearance, apart from the fact that people with BDD were significantly more likely to report experiencing future-oriented thoughts than people with 'normal concerns'.

2) As predicted, people with BDD endorsed negative metacognitive beliefs (regarding both the uncontrollability and danger and the responsibility, superstition and punishment associated with thoughts about appearance) more strongly than people with 'normal concerns'. There was no such significant difference with regard to positive metacognitive beliefs, however.

3) People with BDD reported employing more punishment, reappraisal and worry strategies, while the 'normal concerns' group employed more distraction and social control strategies. Only the differences for social control and punishment reached

statistical significance, but this nevertheless provides support for the hypothesis that there would be significant differences between the 2 groups, with regard to frequency of use of different types of thought control strategy.

4) As predicted, compared to people with 'normal concerns', people with BDD reported significantly lower effectiveness of their 2 most frequently employed strategies (1 involving avoidance of thoughts and 1 involving engagement with thoughts) at reducing the frequency, intensity and distress associated with thoughts about appearance.

5) Contrary to predictions, the most frequently employed engagement strategy was not significantly more effective than the most frequently employed avoidance strategy, at reducing the frequency, intensity and distress associated with thoughts about appearance, regardless of group.

6) Compared to people with 'normal concerns', people with BDD reported significantly higher frequency of appearance-related thoughts pertaining to self-criticism and the future, but there were no significant differences with regard to the 4 other types of thoughts about appearance.

7) As predicted, people with BDD reported significantly higher levels of negative affect associated with thoughts about appearance than people with 'normal concerns'. When examined more closely, this significant difference between the groups applied for 5 of 6 types of negative affect.

8) Compared to people with normal concerns regarding appearance, people with BDD reported that thoughts about appearance were associated with significantly greater impact on functioning, as predicted.

4.2) Interpretation of findings and relationship to existing literature

4.2.1) Content of appearance-related thoughts

Both descriptive and quantitative data were used to investigate thought content similarities and differences between people with BDD and people with 'normal concerns' regarding appearance. Together, these 2 types of data constitute preliminary evidence that the content of thoughts about appearance is broadly similar in people with BDD and people with normal concerns about appearance. This is in line with findings relating to obsessive thoughts (Rachman and De Silva, 1978), worry (Craske et al., 1989) and appearance related thoughts and images (Cash et al., 1986; Osman et al., 2004).

4.2.1.i) Descriptive data

All 44 participants spontaneously reported at least 1 appearance-related thought which was classifiable according to a coding grid with 6 predetermined thought categories[13].

[13] The 6 categories are: critical/self-attacking thoughts, past-oriented thoughts, thoughts about what others might think, future-oriented thoughts, comparing thoughts, planning to change one's appearance.

For both groups, critical/self-attacking thoughts were most frequently reported, followed by thinking about what others might think for the BDD group, and past-oriented thoughts for the control group.

It was intended that by posing an open question, thought content beyond the a priori categories would be captured, but almost all spontaneously mentioned thoughts were accommodated by the grid (only 4 participants reported unclassifiable thoughts). All 6 thought categories were assigned thoughts volunteered by participants in both of the groups. This would suggest that the 6 categories are face valid, appropriate and sufficient for investigating the appearance-related thoughts of both people with BDD and people with 'normal concerns' regarding appearance. The use of these categories in the 'quantitative data' section on thought content would therefore seem justified, although one should remain open to the possibility that additional categories might emerge in future research with a larger sample and that the thought content category list would then need to be expanded.

4.2.1.ii) Quantitative data

The hypothesis (1) that there would be no significant difference between the 2 groups, with regard to whether or not they report experiencing 6 different types of thoughts about appearance when prompted, was mostly supported.

When asked about each of the thought types in turn (regardless of whether or not the

thought type had been mentioned in response to the open question), people with BDD were no more or less likely to report experiencing 5 of the 6 different categories of thoughts about appearance than people with 'normal concerns'. Participants with BDD were, however, significantly more likely to report experiencing future-oriented thoughts (worrying about how they will look in the future, for example) than people with 'normal concerns'. It is difficult to make further interpretation of these findings, other than to say that they require replication, ideally with larger samples.

4.2.2) Frequency of appearance-related thoughts

As predicted (hypothesis 6), participants with BDD reported significantly higher overall frequency of thoughts regarding appearance, compared to the 'normal concerns' group. Although no specific predictions were made regarding individual thought types, closer examination of the different thought types was nonetheless informative. The difference between the 2 groups was only significant for self-attacking thoughts and future-oriented thoughts, but not past-oriented thoughts, comparing thoughts, thoughts about what others might think and planning to change one's appearance.

It is possible that the non-significant differences between the groups for 4 of 6 thought category types could be partly explained by the conservative choice of control group and increased Type II error rate owing to the adjustment of statistical significance cut-offs, using the modified Bonferroni procedure. Examination of the associated p values indicates, however, that only 1 further thought type (comparing) would have been

associated with a statistically significant difference, if no adjustments had been made for multiple tests. Replication with larger sample sizes would certainly be informative.

Examination of the wording of the interview questions also raises a potential problem with the interpretation of these findings. Participants were asked 'When you are thinking about or preoccupied with your appearance, how often do you experience thoughts about....?'. Discussion after the interview revealed that some participants had reported how often they experience each type of thought as a proportion of total time spent preoccupied with appearance, while other participants had reported frequency as a proportion of all time available. It is likely that the former strategy would result in smaller differences between the groups. The wording of these questions would require refinement for future research.

The verbal labels attached to the rating scale also warrant discussion. The inclusion criteria for the control group stated that no more than 1 hour per day should be spent dwelling on thoughts about appearance. For those control group participants reporting frequency of the various thoughts as a proportion of all time available, one would not therefore expect responses higher than 'sometimes' (the following scale point was 'half the time', suggesting that people were spending half their waking hours preoccupied with a particular type of appearance-related thought). Revision of the rating scale labels and perhaps extension of the scale itself seem desirable for future research.

4.2.3) Metacognitive beliefs

Both descriptive and quantitative data were used to explore metacognitive beliefs.

4.2.3.i) Descriptive data

4.2.3.i.a) Advantages/gains of being preoccupied with thoughts about appearance

In response to an open question regarding advantages/gains of being preoccupied with appearance, 12 of 22 BDD group participants and 20 of 22 control group participants spontaneously reported advantages/gains. Motivation to improve appearance was the advantage most frequently reported by participants in the control group, while BDD group participants reported avoidance of other worries or social intimacy and motivation to improve appearance most frequently, compared to other advantages.

It was intended that by posing an open question, advantages and gains beyond the a priori categories would be captured, but almost all spontaneously mentioned advantages were accommodated by 4 of the 5 a priori coding grid categories: empathy for others, insight/self-awareness, avoidance (either of other worries or social intimacy) and motivation to improve appearance (only 4 participants reported unclassifiable thoughts). One category was found to be redundant: coming to terms with difficulties. It would seem that the remaining 4 coding grid categories are face valid, appropriate and

sufficient for exploring advantages/gains of being preoccupied with appearance. The categories could serve as a basis for further research comparing the 2 groups with regard to strength of BDD-specific metacognitive belief perhaps.

4.2.3.i.b) Disadvantages of being preoccupied with thoughts about appearance

All participants, except for 4 from the control group, spontaneously reported disadvantages associated with being preoccupied with appearance, in response to an open question. Negative impact on social life and relationships was the disadvantage most often reported by the BDD group, while the control participants reported increase in low mood and/or anxiety most frequently, compared to other disadvantages. This may reflect the fact that the preoccupation of the control group is less severe and therefore less likely to impact on social functioning.

Contrary to expectations of capturing novel material, all but 9 spontaneously mentioned disadvantages were accommodated by the 4 predetermined categories: increase of low mood and/or anxiety, wastes time, negative impact on social life and relationships and negative impact on career. It would be helpful to add a further category to the coding grid for future research: being unable to think about other issues. Otherwise, it would seem that the coding grid is appropriate for categorising disadvantages associated with thoughts about appearance and could be used as a basis for further research on this topic or as a guide for assessment.

4.2.3.i.c) Negative consequences of giving up being preoccupied with appearance

In response to an open question regarding possible negative consequences of giving up being preoccupied with appearance, 14 BDD group participants and 11 control group participants reported either that nothing bad could happen or that they did not know what would happen. All but 2 spontaneously mentioned consequences were accommodated by the 3 predetermined categories: physical health would suffer, appearance would suffer and preoccupation would shift to other issues, not related to appearance, suggesting that this coding grid would serve as a useful guide for both clinical assessment and further research.

Concern that the preoccupation might shift to other issues was mentioned by only 1 control group participant and by none of the BDD group participants, indicating perhaps that it could be excluded from future coding grids. Further investigation using a larger sample might help to verify this. Furthermore, it is of interest that all classifiable BDD group consequences were categorised within the 'appearance would suffer' category, while control group participants' responses fell in all 3 categories. This suggests potential differences between the precise content of BDD and control group participants' ideas of possible negative consequences if they were to give up being preoccupied with appearance. This hypothesis would of course require empirical validation, using quantitative data to assess strength of belief, for example.

4.2.3.i.d) Negative consequences of remaining preoccupied or being unable to control thoughts about appearance

All participants spontaneously reported at least 1 belief regarding the possible negative consequences of remaining preoccupied with or being unable to control thoughts about appearance. Consequences most frequently reported by BDD group participants concerned becoming crazy/mad or being admitted to a psychiatric hospital, becoming housebound, becoming depressed and trying to kill oneself. The negative consequences most frequently mentioned by control group participants pertained to losing confidence and self esteem, negative impact on job or career, negative impact on social life and relationships and becoming depressed.

According to the coding grid categories, 9 beliefs were unclassifiable, although the addition of 2 further categories (resorting to cosmetic surgery and worsening preoccupation) would accommodate 5 of these. As intended, the open question captured consequences beyond the a priori categories, although all but 1 (negative impact on physical health) of the original categories were found to be appropriate.

It is of interest that no BDD participants endorsed either negative impact on social life/relationships or loss of confidence or self-esteem. It is likely that this is because they are already suffering these consequences as a result of the BDD and do not therefore fear them as possible negative consequences of increased preoccupation. Furthermore, several of the consequences mentioned most frequently by people with

BDD (becoming housebound, trying to kill oneself and going crazy) were only mentioned by a maximum of 1 person from the control group. It is possible that this can be explained in part by the fact that many of the participants with BDD had read about people in such predicaments on internet self-help sites, while people with normal concerns found it hard to conceive of worries about appearance becoming so extreme. This hypothesis requires further investigation.

4.2.3.ii) Quantitative data (MCQ)

The hypothesis (2) that people with BDD would endorse both positive and negative metacognitive beliefs significantly more strongly than people with 'normal concerns' regarding appearance was partly supported by analysis of MCQ scores. Certainly, people with BDD endorsed both types of negative metacognitive beliefs (regarding the uncontrollability and danger of thoughts about appearance and the responsibility, superstition and punishment associated with thoughts about appearance) significantly more strongly than the control group, but the same was not found to be the case for positive metacognitive beliefs.

Before discussing these findings in more detail, it is useful to briefly consider the MCQ itself. It is questionable whether 2 of the scales on the MCQ actually relate to metacognitive beliefs (the cognitive competence subscale, which mainly comprises items regarding confidence in memory, and the cognitive self-consciousness scale, which pertains to monitoring of thoughts). It was felt that the cognitive competence

subscale has little relevance to BDD, as, unlike in OCD, thoughts do not centre so much around whether or not one has performed particular actions. It could be argued that people with BDD are by definition more cognitively self-conscious, given that BDD is a disorder of preoccupation with particular thoughts. For these reasons, it was decided to disregard these 2 subscales from comparative analyses.

In the absence of a BDD-specific measure of metacognitive beliefs, the MCQ was selected as the most suitable measure, partly because of its psychometric properties and partly because most of the questions could be interpreted to refer to thoughts and worry about appearance, rather than to general intrusive thoughts or worries, without re-wording individual items. Participants were instructed at the beginning to interpret all items as referring to thoughts about appearance only and not to other thoughts, but it is difficult to assess how successful people were in following these instructions, especially given the length of the measure (65 items). Given the fact that the descriptive data indicates the existence of appearance-specific metacognitive beliefs and that research on hypochondriasis (Emmelkamp and Aardema, 1999) pointed towards the necessity of investigating health-related metacognitions, it would seem reasonable to advocate the construction of a measure of appearance-specific metacognitive beliefs, to complement more general measures, such as the MCQ. The coding grids used for the descriptive data in the current study could be used for this purpose.

Interestingly, the control group endorsed positive beliefs regarding thinking about appearance more strongly than the BDD group, but this difference did not reach

statistical significance. This finding (that people with BDD did not report significantly more positive metacognitive beliefs on the MCQ than the control group) contradicted predictions made on the basis of research on other disorders and is complemented by the aforementioned findings from descriptive data, that considerably fewer people in the BDD group, than in the control group, spontaneously reported advantages associated with being preoccupied about appearance. Furthermore, over 50 percent of the BDD group reported that nothing bad could happen if they gave up being preoccupied with appearance. These findings, taken together, suggest that positive metacognitive beliefs are potentially less relevant to BDD than they are to other disorders such as OCD (e.g. Cartwright-Hatton and Wells, 1997), GAD (e.g. Wells, 2000) and depression (e.g. Watkins and Baracaia, 2001). It should be noted, however, that appearance-specific metacognitive beliefs are not included in the MCQ. The descriptive data suggest that appearance-specific positive beliefs regarding the positive impact of being preoccupied with appearance on appearance itself might well be of relevance to understanding appearance concerns. This hypothesis could be empirically evaluated if a measure of appearance-specific metacognitive beliefs were developed.

BDD group participants endorsed negative metacognitive beliefs regarding the uncontrollability and danger of thoughts about appearance and regarding responsibility, superstition and punishment significantly more strongly than participants with 'normal concerns'. The former subscale includes items regarding the potential negative consequences of particular thoughts on mental health, physical health, ability to control thoughts and ability to attend and concentrate. The descriptive data discussed above

complements this finding, particularly with regard to beliefs regarding impact on mental health (compared to participants with 'normal concerns' regarding appearance, considerably more BDD group participants spontaneously reported potential negative consequences of thinking about appearance for mental health (e.g. becoming crazy and trying to kill oneself)).

The findings for both negative metacognitive belief subscales corresponds to literature on other disorders, such as OCD (e.g. Wells and Papageorgiou, 1998), GAD (e.g. Cartwright-Hatton and Wells, 1997) and depression (e.g. Papageorgiou and Wells, 2001), for which such beliefs have been found to distinguish clinical and non-clinical participants.

As new measures of metacognitive beliefs become available, this line of research should be repeated with larger samples, in order to replicate and extend the current findings.

4.2.4) Thought control strategies

Again, descriptive and quantitative data were used to explore strategies employed to control thoughts about appearance.

4.2.4.i) Descriptive data

All participants spontaneously reported employing thought control strategies in response

to thoughts about appearance when asked an open question, which is consistent with existing research findings that 92 percent of non-clinical participants employ effortful strategies in response to intrusive thoughts (Freeston et al., 1991)

The 2 strategies most frequently reported by both participants with BDD and participants with 'normal concerns' were thinking about something else and rationalising thoughts. Interestingly, convincing oneself that appearance is unimportant was commonly used by control group participants, but not BDD group participants (7 control group participants spontaneously mentioned this strategy, compared to just 1 BDD group participant). Given that the belief that appearance is an important self-defining characteristic is posited as 1 of the defining features of BDD (see Veale et al., 1996), it comes as little surprise that BDD group participants did not select a cognitively dissonant strategy.

Almost all of the coding categories were found to be appropriate and were assigned strategies mentioned by at least 2 participants. Just 1 category was found to be redundant and should probably be excluded from any future research using this coding grid: asking people if they have similar thoughts. Twenty strategies were deemed unclassifiable according to the coding grid, but 15 of these were not strictly speaking mental thought control strategies (they pertained instead to engaging in a distracting activity). The inclusion of an additional category (telling oneself there is nothing one can do about the feature) would accommodate 3 further strategies. The remaining 2 strategies were reported by the same BDD participant and referred to compulsions.

Given that these were not mentioned by other participants, if is probable that it would not be appropriate to include these as a category in the coding grid. Further research with a larger sample would verify this.

In summary, it would seem that most of the strategy categories in the coding grid are face valid and appropriate for exploring thought control strategy use in people with BDD and people with 'normal concerns' regarding appearance. The adapted coding grid (including the proposed additional category (telling oneself there is nothing one can do about the feature)) could therefore be used as a guide for examining the differences between the 2 groups further, looking at frequency of use of the various strategy types, for example.

4.2.4.ii) Quantitative data

4.2.4.ii.a) TCQ

The hypothesis (3), that there would be significant differences between people with BDD and people with 'normal concerns' about appearance, regarding frequency of use of different strategies was supported by analysis of TCQ scores. The BDD group reported using more punishment, reappraisal and worry strategies, while the 'normal concerns' group employed more distraction and social control strategies. Only the differences for social control and punishment reached statistical significance, however.

Before reviewing these findings further, it is useful to briefly discuss the TCQ itself. Like the MCQ, the TCQ was selected as the most appropriate measure of metacognitive strategies of thought control, in the absence of a BDD-specific measure. Again this decision was made partly because of the measure's psychometric properties and partly because most items could be interpreted to refer to thoughts and worry about appearance without rewording. Participants were instructed at the beginning to interpret all items as referring to thoughts about appearance only and not other thoughts, but again it is difficult to assess to what extent people were able to adhere to these instructions. In spite of these problems, the TCQ is well-validated and is 1 of very few measures of thought control strategy

The finding regarding punishment strategies (getting angry and shouting at oneself for having particular thoughts, for example) is consistent with the findings of Wells and Davies (1994), who found that punishment strategies were associated with neuroticism, public self-consciousness and trait anxiety. Furthermore, Amir et al. (1997) found that people with OCD or another anxiety disorder reported employing strategies involving punishment significantly more frequently than non-clinical control participants and Reynolds and Wells (1999) found that use of punishment strategies was predictive of depression scores in people with depression.

The significant finding regarding social control (people who scored higher on this subscale reported that they more frequently talked to other people about the thought) contradicts Amir et al.'s (1997) finding that people with OCD reported employing

strategies involving social control significantly more frequently than non-clinical control participants. It is possible that social control as a thought control strategy is less available to people with BDD, because many of them are socially isolated, sometimes to the point of being housebound (Phillips et al., 1993). The shame associated with BDD might further contribute to people preferring not to talk about the thoughts.

4.2.4.ii.b) Effectiveness of thought control strategies

As predicted (hypothesis 4), compared with people to normal concerns regarding appearance, participants with BDD reported significantly lower overall effectiveness of their 2 most frequently employed strategies (avoidance and engagement) at reducing the frequency, intensity and distress associated with thoughts about appearance. This finding is consistent with the findings of Ladouceur et al. (2000), that people with OCD or other anxiety disorders reported significantly lower efficiency of thought control strategies in general, than non-clinical participants. It also makes intuitive sense, for if people with BDD had found effective strategies, they would presumably be less troubled by the preoccupation (and therefore perhaps not meet the diagnostic criteria for BDD).

Hypothesis 5 predicted that, compared to the most frequently employed avoidance strategy, the most frequently employed engagement strategy would be significantly more effective at reducing the frequency, intensity and distress associated with thoughts about appearance, regardless of group. This hypothesis was not supported (neither type of strategy was significantly more or less effective than the other), which is somewhat

surprising, given Matthew's (1990) ideas regarding avoidance techniques reducing exposure to thoughts and therefore rendering extinction less likely. The current finding is in line with Freeston et al.'s (1995) findings, however; that all strategies used in response to intrusive thoughts were equally efficient.

It is important to note, that no distinction was made in the interview questions between long and short-term effectiveness, however, and it is likely that this may have affected the reliability of the ratings. It is possible that avoidance strategies may be immediately effective, but counter-productive in the longer-term, while engagement strategies might seem less effective in the short-term. This could be explored in future research.

If one examines the list of strategies categorised as 'engagement' strategies, it is likely that many of these are in fact aimed at ultimate avoidance of thoughts about appearance, rendering the distinction between the 2 categories somewhat unreliable. Freeston and Ladouceur (1997) discuss cases where strategies taught in cognitive therapy (e.g. thought challenging) can become so-called 'neutralising strategies', which avoid exposure to the thought. Many of the participants with BDD in the current study had learned cognitive therapy techniques and it is possible that these had inadvertently become ways of avoiding appearance-related thoughts. Those strategies would then have been incorrectly classified as engagement strategies. Freeston et al. (1991) argue for a distinction, within Salkovskis' notion of neutralising activity as any intentional, effortful strategy employed in response to intrusive thoughts, between escape/avoidance and sustained attention (engagement) strategies. They posit that sustained attention

strategies do not actually seek to terminate exposure to the thought. It would seem more reasonable to argue that careful analysis is required on an individual basis regarding whether sustained attention (engagement) strategies aim to terminate exposure to the thought or not. This viewpoint is supported by Freeston and Ladouceur's (1997) emphasis on the difficulty in reliably distinguishing strategies that should be targeted for response prevention in interventions for OCD. The heterogeneity of strategies within each group in the current study also renders the engagement versus avoidance distinction questionable and points towards the need for closer examination of each individual strategy prior to any classification in both therapy and future research.

4.2.5) Negative affect associated with thoughts about appearance.

Participants with BDD reported significantly higher overall negative affect associated with thoughts about appearance than people with 'normal concerns' about appearance, as predicted (subsidiary hypothesis 7). Although not predicted specifically, it is of interest that the difference between the groups was significant for sadness, worry, anger, fear, shame, but not for guilt.

The main finding that compared to people with 'normal concerns' regarding appearance, people with BDD experience higher negative affect associated with thoughts about appearance confirms intuitive expectations, in light of the BDD diagnostic criterion of significant distress and the limited research already conducted on mood changes in BDD (e.g. Phillips, Siniscalchi and McElroy, 2004). It is difficult to make sense of the non-

significant finding for guilt. A number of participants with BDD said they were being encouraged to abandon guilt in therapy and that being given a diagnostic label was helping them to feel less guilty. This explanation is somewhat anecdotal however and future research aiming to replicate and extend these findings on negative affect is clearly necessary, ideally using larger samples.

4.2.6) Impact on functioning

Compared to participants with 'normal concerns' about appearance, participants with BDD reported that thoughts about appearance have a significantly greater impact on functioning, confirming predictions (subsidiary hypothesis 8). This is in line with expectations, given the findings of Phillips (2000) on the poor quality of life associated with BDD and the fact that impairment in social and occupational functioning constitutes a diagnostic criterion for BDD. Replication with larger sample sizes is necessary.

4.2.7) General issues

It should be noted that age was controlled for in all analyses. The mean age of control participants was 25.55 years and considerably closer to adolescence than that of the participants with BDD (33.91 years). Concerns regarding physical development peak in adolescence (see Biby, 1998) and it is possible that the younger mean age of control participants might have decreased differences between the 2 groups. Given the already

conservative choice of control group, it was felt that some balance should be aimed for, by controlling for age. Education level was also controlled for in all analyses, although one should perhaps bear in mind that education was measured by highest educational qualification. Given the fact that many participants reported suffering from BDD since adolescence, it is highly likely that their educational achievements might have suffered. Therefore, the difference between the 2 groups in terms of education does not necessarily reflect a difference in IQ. Ethnicity was not controlled for. Although it is clear from existing research that ethnicity could influence concerns about appearance (see Cash and Pruzinsky, 2002), the differences in ethnicity between the 2 groups in the current study were minimal.

At a time when research on BDD is in its infancy and clinically-relevant findings are urgently needed, it did not seem appropriate to include depression, anxiety or worry as co-variates in statistical analyses, in spite of the existence of significant differences between the 2 groups. This decision could be criticised, but given that clinically significant distress constitutes a diagnostic criterion for BDD and that empirical evidence suggests that up to 80 percent of people with BDD also suffer from clinical depression (Cororve and Gleaves, 2001), one might question whether it is possible to conceive of BDD without depressed mood. Consideration of rates of co-morbidity with other anxiety disorders and the integral nature of worry to BDD can be used to justify the decision not to control for anxiety or worry in analyses.

4.3) Theoretical and clinical implications of the findings

In summary, it would seem that the content of thoughts about appearance is similar in people with BDD and people with normal concerns regarding appearance. People with BDD endorse negative metacognitive beliefs significantly more strongly, however. Descriptive data suggest that appearance-specific positive metacognitive beliefs might be of relevance to BDD, but this requires confirmation in future research. The 2 most frequently employed thought control strategies used by participants with BDD were significantly less effective than those used by participants with 'normal concerns' regarding appearance. Strategies involving avoidance of the thoughts about appearance were not found to be significantly less effective than those involving engagement with the thoughts.

These findings have implications for cognitive-behavioural models of BDD and possible maintenance mechanisms. Veale's (2004) model, outlined above, needs to be modified to include metacognitive beliefs and mental strategies of thought control. A proposed revised model would begin with a trigger (the sight of oneself in a mirror, for example). This would activate a distorted internal image, which in turn would activate beliefs about oneself as an aesthetic object, the importance of appearance itself and the possible advantages of worrying about appearance (positive metacognitive beliefs). These beliefs would increase the attention to the internal image (thereby distorting it further) and also activate appearance-related thoughts pertaining to self-criticism, comparing, the future, the past, planning to change appearance and others' views of one's appearance.

These thoughts would in turn trigger cognitions about the possible negative consequences of remaining preoccupied with thoughts about appearance (negative metacognitive beliefs). Mental strategies of thought control (particularly involving punishment), safety behaviours/avoidance and negative affect (sadness, anxiety, fear, anger, shame) would ensue and would inadvertently reinforce both the original thoughts and the negative metacognitive beliefs, thereby maintaining the preoccupation.

An idiosyncratic example of this revised model might involve someone catching sight of their reflection while walking past a shop window, at which point a distorted internal image of flawed skin becomes activated. This internal image would activate beliefs, such as, 'If I keep thinking about my skin, it will stop it from getting any worse' (positive metacognitive belief) and 'I must look perfect, otherwise people will reject me'. These beliefs would increase the attention to the internal image distorting it further and also activate thoughts, such as 'I'm ugly' (self-attacking thought), 'Her skin is so much better than mine' (comparing thought), 'What if my skin gets worse?' (future-oriented thought), 'If only I'd remembered to take my make-up off before I went to bed last night' (past-oriented thought), 'She must think I don't take care of myself at all' (thought about what others might think) and 'I wonder how I can get laser treatment' (thought about planning to change one's appearance). These thoughts would in turn trigger beliefs, such as 'If I keep worrying about my skin, I'm going to end up going crazy and killing myself' (negative metacognitive belief). Attempts would be made to control all these thoughts, by checking in the mirror numerous times and applying thick layers of foundation (safety behaviours) or by getting angry at oneself or punishing

oneself in one's head (mental strategy of thought control). The person would feel ashamed and anxious (negative affect), but this, together with the safety behaviours and mental strategies of thought control would only serve to maintain the thoughts, beliefs, distorted image and self-focussed attention.

These findings also have implications for the assessment of BDD. At assessment, people should be routinely asked about metacognitive beliefs, in addition to thoughts and images pertaining to appearance. For the meantime, existing measures of metacognitive beliefs should be used (e.g. the MCQ), with particular attention to the 2 negative belief subscales. Such measures should be supplemented with questions about appearance-specific metacognitive beliefs, such as the idea that worrying about appearance can improve appearance. The coding grids from the current study have been shown to be potentially robust assessment tools and should certainly be used as guides for assessment. Once an appearance-specific measure of metacognitive beliefs has been developed, this should be administered routinely. Aswell as asking about safety behaviours, the assessor should also enquire about mental strategies of thought control (perhaps using measures such as the TCQ), being particularly attentive to strategies involving punishment.

These findings inevitably have implications for cognitive-behavioural interventions for people with BDD. The fact that the content of thoughts about appearance is similar in both groups suggests that little would be gained by challenging the content of the thoughts in the first instance. The sometimes delusional nature of the appearance-

related thoughts in BDD also renders direct content challenging counter-productive and unacceptable to many people with BDD. Rather, metacognitive beliefs should be targetted, in addition to beliefs about the importance of appearance itself. In addition to working to reduce safety behaviours and avoidance, mental strategies of thought control that might be preventing exposure and inadvertently maintaining the preoccupation should be abandoned, particularly those involving punishment. It is important to explore the thought control strategy repertoire of each individual in great detail, to establish to what extent the strategies involve avoidance. It should not be assumed that classic cognitive therapy techniques such as thought challenging are exempt from this, as they too may have become avoidance techniques. Research into the effectiveness of therapy incorporating these additional elements should be begun at the earliest opportunity to ensure evidence-based practice.

4.4) Limitations of the study

The current study has a clinical sample size, considerably larger than many of the BDD outcome research studies (e.g. Wilhelm, et al., 1999). As indicated in existing research (e.g. Veale et al., 1996), it is difficult to engage people with BDD in assessment and research, perhaps because of the associated shame and social isolation. Many participants reported feeling anxious about the interview, because it involved meeting someone new and disclosing information they found shameful. A larger sample should be recruited for future research, but a lengthier time-frame would be required.

As mentioned above, there is little precedent in the BDD literature for devising inclusion and exclusion criteria for control groups. It was hoped that people who regularly attend gyms or beauty salons would have sufficient concerns about appearance to be able to respond to interview questions. The downside of this approach was that some control participants (despite meeting inclusion criteria according to BDDQ-R rating scales) had concerns which seemed to lie very close to the aforementioned indistinct boundary between BDD and normal concerns regarding appearance. Therefore, the comparison group may have been overly conservative, thereby reducing the power of the study. Comparison groups of people with other disorders were not included, limiting the scope of interpretation.

Finding a compromise between wanting to access novel information and wanting to capture breadth of experience was challenging. It is hoped that the combination of open questions and rating scale items (and the ensuing descriptive and quantitative data) maintained this balance, but one should nonetheless be aware of the potentially restrictive influence of predetermined items.

As mentioned above, the wording of selected items in the interview schedule (e.g. the questions about frequency of particular thought types) could have resulted in quite differing interpretations of those items. The reliability of the ensuing data is therefore questionable. Furthermore, participants' ratings on selected scales seemed to evidence ceiling effects. This would need to be addressed in future research.

As discussed above, the 'avoidance' versus 'engagement' distinction regarding thought

control strategies is problematic[14]. More careful categorisation of strategies should be aimed for in future research. Furthermore, a considerable number of the BDD participants had experience of cognitive-behavioural therapy (either past or present) and it is possible that the strategies they reported had been learned in therapy. This might have affected the differences between the 2 groups with regard to strategy use.

The number of research hypotheses and ensuing statistical analyses could be viewed as a weakness of this study. Given that research on BDD is in its infancy, however, it was felt that an exploratory design of this nature was wholly appropriate. Furthermore, prior hypotheses were formed, the temptation to explore data post hoc was resisted and the approach to statistical analysis was carefully designed to compensate for the multiple tests[15].

The current study does not address questions of causality, which could also be viewed as a weakness. Given that this study is the first systematic investigation of metacognition in BDD, however, associative hypotheses are wholly appropriate.

4.5) Suggestions for further research

One line of future research would be to replicate this study with a larger sample. As mentioned above, a lengthy time-frame would need to be planned for this. The aforementioned problems with the wording and rating scales of selected interview items

[14] See page 170
[15] See page 201-202 (Critical Appraisal) for further discussion of this point

would need to be addressed.

Future research should include comparison groups consisting of people with other disorders. The most appropriate inclusion and exclusion criteria for non-clinical comparison groups should be investigated.

An appearance-specific measure of metacognitive beliefs should be designed, perhaps using the coding grids from this study as a guide. This should be tested for reliability and validity on as large a sample as possible. Such a measure would have the advantage of being phenomenologically derived. Correlational studies on strength of belief in metacognitive beliefs and symptom severity would be informative. Longitudinal studies and experimental manipulation of metacognitive beliefs are required to capture any causal relationship between metacognitive beliefs and thoughts about appearance.

The current work on thought control strategies requires extension. Future studies could focus on strategies elicited by specific thoughts, long-term and short-term effectiveness of strategies, the usefulness of categorising strategies and the link between thought appraisal and strategy selection. Again, longitudinal and experimental studies are needed to address questions of causality.

The inclusion of metacognitive beliefs and thought control strategies as targets for cognitive-behavioural intervention requires empirical validation. Randomised controlled trials are needed, comparing standard CBT, CBT with an additional focus on

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PART 3

CRITICAL APPRAISAL

1) Outcome and expectations

The findings of this research were mostly consistent with the researcher's expectations.

The content of thoughts about appearance was found to be broadly similar in people with BDD and people with 'normal concerns' (supported by descriptive and quantitative data). The researcher's awareness both of research findings on cognitive process content in other disorders, such as OCD (Rachman and De Silva, 1978) and GAD (Craske, Rapee, Jackel and Barlow, 1989), and of the general emphasis on appearance in modern society contributed to a feeling of relative confidence regarding this hypothesis.

It is of interest that participants with BDD were significantly more likely to report thoughts pertaining to the future, than participants with normal concerns. This difference was not expected and is somewhat surprising given that concern regarding future ageing, for example, would seem to be highly prevalent in today's society. It is possible that the younger mean age of the control group participants meant that many participants had not yet reached an age where the potential impact of age on appearance becomes a reality.

The fact that the difference in frequency of the various thoughts about appearance was statistically significant for only 2 of the 6 thought types (future-oriented thoughts and self-critical thoughts) was wholly unexpected. One might hypothesise that the conservative nature of the control group contributed to this lack of difference between

the 2 groups, but no member of the control group reported spending longer than 1 hour per day preoccupied, while all participants with BDD reported dwelling on thoughts about appearance for at least 4 hours each day. One would therefore expect significant differences in frequency across all thought types. There are a number of explanations for this finding[16]. Examination of the mean group frequencies for each thought type reveal that control group means for the non-significant thought types are surprisingly high (for comparing thoughts and thoughts about what others might think, for example, control group participants indicated that they spend over half the time preoccupied with this type of thoughts about appearance). This indicates that many of the control group participants may well have been indicating for what proportion of the total time spent preoccupied with appearance they experience the individual thoughts types, rather than for what proportion of time generally. The confusing wording of these items seems to be a likely explanation for these findings, but the fact that the non-significant finding was not evidenced accross all 6 thought types is somewhat puzzling. A further possibility is that people with BDD spend most of their preoccupied time focussing on these 2 thought types and that the other thought types occur relatively infrequently. Certainly, of the 6 thought types, the 2 thought types associated with significant differences were rated most frequent by people with BDD, but without further empirical investigation, it is difficult to make definitive statements about this hypothesis.

The findings on associated negative affect and impact on functioning were as predicted. The researcher felt relatively confident regarding these hypotheses, given the fact the 2

[16] See page 156

phenomena in question (negative impact on functioning and associated negative affect) correspond closely to diagnostic criteria for BDD and have already been validated in existing research (e.g. Phillips, 2000). The non-significant finding for guilt was unexpected and indicates that more detailed research on the precise nature of negative affect in BDD needs to be undertaken. Possible explanations of this finding have already been discussed[17].

In light of the lack of previous research on metacognition in BDD, the researcher felt somewhat less confident regarding the metacognitive belief hypotheses. Participants with BDD endorsed negative metacognitive beliefs, but not positive metacognitive beliefs, significantly more strongly than people with 'normal concerns'. It was expected, given empirical evidence for the role of positive metacognitive beliefs in models of other disorders such as GAD (e.g. Wells, 1995) and OCD (e.g. Salkovskis, 1999), that the current study might have evidenced significant differences for strength of positive metacognitive beliefs. This can be explained, at least in part, by the fact that the MCQ does not include appearance-specific metacognitive beliefs[18]. Advantages spontaneously mentioned by people with BDD in response to an open question included motivation to improve appearance and all participants with BDD who reported negative consequences of giving up being preoccupied with appearance mentioned negative impact on appearance. It is likely therefore that these appearance-specific metacognitive beliefs are associated with increased preoccupation with appearance, rather than more general positive metacognitive beliefs captured by the MCQ.

[17] See page 171
[18] See page 163

With regard to thought control strategies, the significant difference between the groups with regard to frequency of use of punishment strategies was expected. It was difficult to know what to expect for the other strategy types, given the limited and sometimes contradictory literature for other disorders[19], hence the rather general hypothesis of differences in strategy use. It was predictable that participants with BDD would report lower effectiveness of strategies, given the fact that they continue to suffer from BDD. The problematic nature of the avoidance versus engagement distinction[20] became clear to the researcher as the study progressed, so therefore the lack of a significant difference between the effectiveness of engagement and avoidance strategies was not altogether surprising.

Taken together, these findings provide strong evidence that the content of thoughts about appearance is broadly similar in people with BDD and people with 'normal concerns' regarding appearance. Evidence has also been found of an association between certain aspects of metacognition (negative metacognitive beliefs and thought control strategies involving punishment) and increased preoccupation with appearance (BDD). The expectation of such associations provided the initial impetus for this study and it is therefore rewarding that, for the most part at least, predictions have received confirmation.

[19] See page 80
[20] See page 170

2) Strengths and limitations

The potential limitations of this study are discussed above[21] and include sample size, the conservative nature of the control group, the wording of selected interview items, the problematic nature of the avoidance versus engagement distinction and the number of hypotheses and associated statistical tests.

In many ways the highly conservative approach adopted in this study (including the criteria for the comparison group, the use of co-variates in all analyses and the adjustments made to statistical significance cut-offs) can be viewed as a strength of this study. One might question, however, whether this approach was in fact overly conservative.

The decision to include education and age as co-variates can be debated, for example. The fact that the control group were significantly younger on average can be seen as contributing to the conservative nature of the control group (people closer to adolescence in age might well be more concerned about appearance than older people). It should be acknowledged that the inclusion of education level as a co-variate might have been overly conservative. Education level was measured according to highest qualification. Many of the participants with BDD reported having being preoccupied with appearance since their teenage years and it could be argued that this may have impacted on their educational achievements. Therefore, lower educational achievement would not necessarily indicate lower IQ. Measuring the IQ of all participants would

have been extremely time-consuming, but would nonetheless have been highly informative.

The decision to use the modified Bonferroni procedure to adjust statistical significance levels can also be debated. The researcher was aware of the dangers of multiple hypothesis testing, but in retrospect the use of the modified Bonferroni procedure could be regarded as over cautious, given that only a priori hypotheses were tested. It is possible that Type II error rates might have been increased, because of the researcher's concerns about Type I error rates. Balancing the 2 types of error rate is always challenging, but it could be argued that the approach to Type I error was overly conservative, especially given the exploratory nature of the current study.

The breadth of this study is most certainly one of its strengths, as is the level of detail captured by the combination of descriptive and quantitative date. Forty-four interviews (lasting between 30 minutes and 1 hour 50 minutes) are inevitably associated with very large quantities of data and the researcher experienced considerable disappointment that it was well beyond the scope of the current study to analyse all data collected. The remaining data will be written up for publication elsewhere, however.

3) Theoretical, clinical and professional implications

The main clinical implications of the findings are discussed above[22]. The fact that

[21] See page 177
[22] See page 174

thought content seems to be broadly similar in participants with BDD and participants with 'normal concerns' gives rise to a question of why such thoughts develop into a time-consuming preoccupation for certain people. Similar questions have been posed with regard to other disorders and researchers have turned to exploration of metacognition in an attempt to explain the maintenance of the cognitive processes. The evidence in the current study for the potential importance of metacognition in understanding the maintenance of BDD should therefore be taken particularly seriously. The findings on metacognitive beliefs and thought control strategies should be used to inform cognitive-behavioural models of BDD, assessment frameworks and intervention approaches, which will in turn require further empirical validation. The coding grids in the current study would serve as excellent guides for assessment and as a basis for measure development. These findings suggest that little would be gained from challenging the content of the thoughts about appearance directly and this information should be disseminated as soon as possible to clinicians working with people with BDD.

Therapy outcome research on BDD is in its infancy, so before large, costly randomised controlled trials are designed to compare standard cognitive-behavioural interventions against other therapy types or no treatment, consideration should be given to including metacognitive interventions in such trials. The difficulties of obtaining funding for such projects are well known to the researcher and the fact that there is at present no specialist NHS service for people with BDD makes the viability of such a trial in the near future less likely. It is hoped that a specialist service for BDD will be established later this year within the South London and Maudsley NHS trust, however, which might

make outcome research easier.

4) Future directions for research

Although the current study has provided useful information, numerous unanswered questions remain. These include whether the maintenance of the preoccupation in BDD can be explained at least in part by metacognition (i.e. whether or not the evidenced associations are can be interpreted as causal), whether or not increased strength of belief in appearance-related positive meta-cognitive beliefs is associated with increased preoccupation with thoughts about appearance, and whether or not meta-cognitive interventions for BDD might be advantageous over and above standard cognitive-behavioural therapy.

A number of suggestions were made above for future research[23]: replication of the current study with a larger sample, comparison with people with other disorders, metacognition measure development, longitudinal and experimental studies on metacognitive beliefs and strategies of thought control and randomised controlled therapy outcome trials.

There is also a need for more research on metacognition generally, particularly on metacognitive interventions for various disorders. Furthermore, increased communication is required between researchers, as there seem to be several research

[23] See page 179

groups exploring metacognition with very little cross-referencing.

Research on the aetiology, prevalence and co-morbidity in BDD should continue, although the consistency between studies needs to be improved, to ensure that future studies are more easily comparable than existing research papers. It should be ensured that studies on model validation and intervention outcome be given priority, however.

5) Process

The researcher was apprehensive about the possible impact of asking people to focus on their difficulties so intensely and whether or not participants with BDD would find the whole experience overwhelming and distressing. Many of the participants confessed to considerable anxiety prior to the interview appointment and the researcher was impressed by the attendance of several participants who were otherwise housebound. Many of the participants had only very recently received a diagnosis and were enthusiastic about research and trying to increase the profile of BDD, in the hope that other people would be diagnosed earlier. After being debriefed, almost all participants with BDD commented that it was useful to talk about their difficulties and to think about their thoughts in the ways encouraged by the interview questions. Several of the participants were seen after the interview appointment at a monthly support group co-facilitated by the researcher and mentioned to the researcher that they had felt relieved and grateful to have been able to talk about their difficulties and to have felt understood. Although the interview was in no way intended as a therapeutic intervention, it is of

interest that participants found discussing their difficulties so helpful. This may reflect a lack of service provision for people with BDD. This information might also be of assistance to researchers encountering resistance from ethics committees, claiming that asking people to talk about their difficulties might be too distressing.

The recruitment of people with BDD was considerably easier than expected, primarily owing to the enthusiasm of the Consultant Psychiatrist. As recruitment progressed, the researcher became increasingly aware of the need to be flexible with the interview appointment times. Many participants arrived late or re-scheduled shortly before the arranged time, because of appearance-related rituals and anxiety. With hindsight, a larger clinical sample might have been obtained, had the researcher approached charitable organisations such as OCD Action and/or placed advertisements on self-help websites for people with BDD. It is likely that this would have involved national travel on the part of the researcher to conduct interviews in participants' homes, however, the funding of which might have proved difficult. Furthermore, the time-scale of the current study was relatively limited.

The recruitment of control group participants was rather more challenging than expected. The majority of people responding to the advertisements were female students and it was particularly difficult to recruit males. Handing out flyers in person was helpful but nevertheless recruitment of the control group participants was completed somewhat later than planned. It is difficult to identify factors that might have facilitated a faster recruitment rate; perhaps increased financial incentives or handing

out flyers in person from the outset.

As recruitment progressed, the researcher became increasingly aware of a small sub-group of participants who were not willing to entertain the possibility that their thoughts about their own appearance might be inaccurate. Their beliefs might well have warranted the label of delusions, but the current study did not assess for this in any way. Such participants sometimes became irritated by some of the thought control strategy questions, as they felt that certain items (such as 'challenging one's thoughts') implied their concerns were not being taken seriously. Diplomacy and sensitivity on the part of the researcher was extremely important in regaining rapport for the remainder of the interview. It would have been interesting to look at whether the data for this sub-group differed in any way from that of those participants who were aware of the fact that their concerns might be inaccurate.

The researcher began this research endeavour with no first-hand experience of people with BDD. As the study progressed, she became increasingly aware of the discrepancy between the extreme distress and impairment associated with this disorder and the lack of existing research and of services and help available. Funding is often only granted for the establishment of services, if proposals are backed by substantial empirical evidence. While remaining very aware of the often minimal impact a single research study can have, it is hoped that this study will make a valuable contribution to a growing body of research on BDD and will inspire others considering research in this field.

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APPENDICES

APPENDIX 1

Body Dysmorphic Disorder Questionnaire – Revised

BDDQ-R

This questionnaire assesses concerns about physical appearance. Please read each question carefully and circle the answer that best describes your experience. Also write in answers where indicated.

1) Are you concerned about the appearance of some part(s) of your body, which you consider especially unattractive (Circle the best answer)

1	2	3	4	5
Not at all concerned	Somewhat concerned	Moderately concerned	Very concerned	Extremely concerned

What are these concerns? What specifically bothers you about the appearance of these body parts?

_____

_____

_____

_____

_____

2) If you are at least somewhat concerned, do these concerns preoccupy you? That is, you think about them a lot and they're hard to stop thinking about? (Circle the best answer)

1	2	3	4	5
Not at all preoccupied	Somewhat preoccupied	Moderately preoccupied	Very preoccupied	Extremely preoccupied

3) On an <u>average day</u>, how many minutes or hour(s) do you currently spend thinking about your feature(s)? Please add up all the time that your features are on your mind (including at the back of your mind) and make the best estimate.

_____ minutes or _____ hour(s) a day

4) On an <u>average day,</u> how many times do you <u>deliberately</u> check your feature(s) <u>(not accidentally catch sight of it)?</u> Please add up all the times you check your feature, including looking at your feature in a mirror or other reflective surfaces like a shop window, looking at it directly or feeling it with your fingers.

_____ times a day

5) Has your physical "defect" often caused you a lot of distress, torment or pain? How much? (Circle the best answer)

1	2	3	4	5
No distress	Mild, and not too disturbing	Moderately and disturbing but still manageable	Severe, and very disturbing	Extreme and disabling

What effect has your preoccupation with your appearance had on your life? (Please describe)

_____

_____

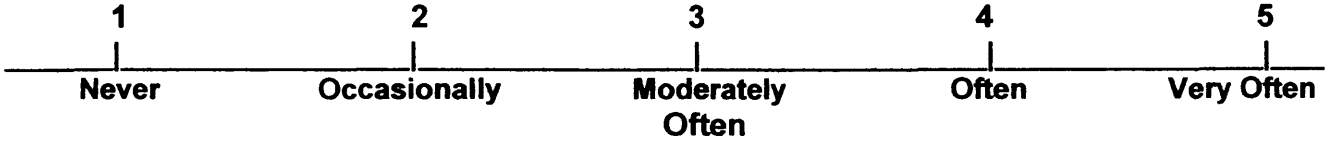
_____

_____

6) Has your physical "defect" caused you impairment in social, occupational or other important areas of functioning? How much? (Circle the best answer)

1	2	3	4	5
No limitation	Mild interference but overall performance not impaired	Moderately, definite interference, but still manageable	Severe, causes substantial impairment	Extreme, incapacitating

7) Has your physical "defect" significantly interfered with your social life? How much? (Circle the best answer)



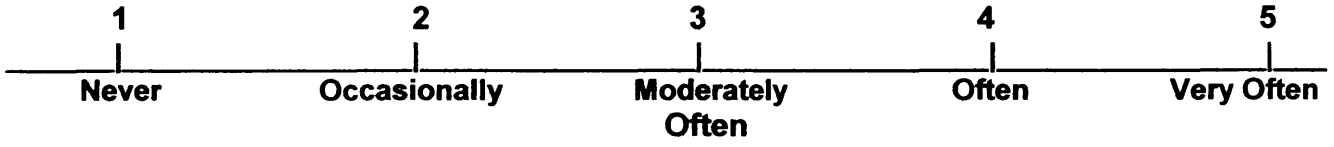
If so, how?

_____

_____

_____

8) Has your physical "defect" significantly interfered with your schoolwork, your job, or your ability to function in your role? How much? (Circle the best answer)



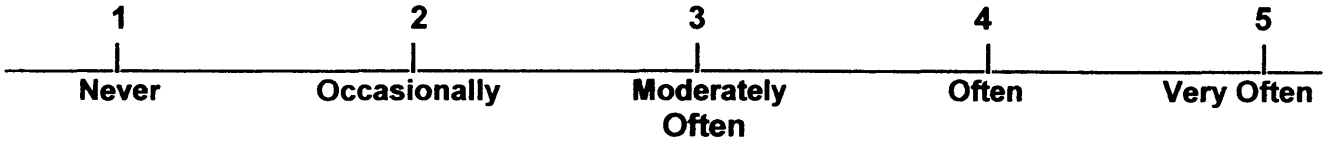
If so, how?

_____

_____

_____

9) Do you avoid things because of your physical "defect"? How often? (Circle the best answer)



If so, what do you avoid?

_____

_____

_____

APPENDIX 2

Personal Details Questionnaire

Personal Details Questionnaire

Please ensure you answer all questions. Thank you.

1) Name: _____

2) Address: _____

3) Phone number: _____

4) Date of birth: _____

5) Gender: Male / Female *(please delete as appropriate)*

6) Education

Please indicate all educational qualifications that you have by ticking as many boxes as apply	
❑ GCSEs ❑ A-Levels ❑ BTEC ❑ HND	❑ Bachelor Degree ❑ Masters level qualification ❑ PhD level qualification ❑ Other (please specify) _____ _____

7) Ethnicity

Please tick one of the boxes to indicate the category that you feel best describes your ethnicity.	
❑ Asian or Asian British-Indian ❑ Asian or Asian British-Pakistani ❑ Asian or Asian British – Bangladeshi ❑ Chinese ❑ Other Asian background ❑ Mixed – White and Black Caribbean ❑ Mixed – White and Black Caribbean ❑ Mixed - White and Asian ❑ Other Mixed background	❑ White - British ❑ White – Irish ❑ White – Scottish ❑ Other White background ❑ Black or Black British – Caribbean ❑ Black or Black British - African ❑ Other Black background ❑ Other ethnic background (please specify _____

8) What is your first language / the language you speak most fluently?

_____

9) Are you currently suffering from any mental health problem or have you ever been diagnosed with a mental health problem in the past? (Please give details)

_____

APPENDIX 3

Metacognitions Questionnaire (MCQ)

Read each statement carefully and tick the box which best describes how much that statement is true for you.

Remember these statements are referring to **your worries, thoughts and images about your appearance** only.

	Do not agree	**Agree slightly**	**Agree moderately**	**Agree very much**
1) Worrying helps me to avoid problems in the future.				
2) Worrying is dangerous for me.				
3) I have difficulty knowing if I have actually done something or just imagined it.				
4) I think a lot about my thoughts.				
5) I could make myself sick with worrying.				
6) I am aware of the way my mind works when I am thinking through a problem.				
7) If I did not control a worrying thought, and then it happened, it would be my fault.				
8) If I let my worrying thoughts get out of control, they will end up controlling me.				
9) I need to worry in order to remain organised.				
10) I have little confidence in my memory for words and names.				
11) My worrying thoughts persist, no matter how I try to stop them.				
12) Worrying helps me get things sorted in my mind.				
13) I cannot ignore my worrying thoughts.				
14) I monitor my thoughts.				
15) I should be in control of my thoughts all of the time.				
16) My memory can mislead me at times.				
17) I will be punished for not controlling certain thoughts.				
18) My worrying could make me go mad.				
19) If I do not stop my worrying thoughts they could come true.				
20) I rarely question my thoughts.				

	Do not agree	Agree slightly	Agree moderately	Agree very much
21) Worrying puts my body under a lot of stress.				
22) Worrying helps me avoid disastrous situations.				
23) I am constantly aware of my thinking.				
24) I have a poor memory.				
25) I pay close attention to the way my mind works.				
26) People who do not worry have no depth.				
27) Worrying helps me cope.				
28) I imagine having not done things and then doubt my memory for doing them.				
29) Not being able to control my thoughts is a sign of weakness.				
30) If I did not worry, I would make more mistakes.				
31) I find it difficult to control my thoughts.				
32) Worrying is a sign of a good person.				
33) Worrying thoughts enter my head against my will.				
34) If I could not control my thoughts, I would go crazy.				
35) I will lose out in life if I do not worry.				
36) When I start worrying, I cannot stop.				
37) Some thoughts will always need to be controlled.				
38) I need to worry in order to get things done.				
39) I could be punished for not having certain thoughts.				
40) My thoughts interfere with my concentration.				
41) It is alright to let my thoughts roam free.				
42) I worry about my thoughts.				
43) I am easily distracted.				
44) My worrying thoughts are not productive.				
45) Worry can stop me from seeing a situation clearly.				
46) Worrying helps me to solve problems.				

	Do not agree	Agree slightly	Agree moderately	Agree very much
47) I have little confidence in my memory for places.				
48) My worrying thoughts are uncontrollable.				
49) It is bad to think certain thoughts.				
50) If I do not control my thoughts, I may end up embarrassing myself.				
51) I do not trust my memory.				
52) I do my clearest thinking when I am worrying.				
53) My worrying thoughts appear automatically.				
54) I would be selfish if I never worried.				
55) If I could not control my thoughts, I would not be able to function.				
56) I need to worry in order to work well.				
57) I have little confidence in my memory for actions.				
58) I have difficulty in keeping my mind focussed on one thing for a long time.				
59) If a bad thing happens which I have not worried about, I feel responsible.				
60) It would not be normal if I did not worry.				
61) I constantly examine my thoughts.				
62) If I stopped worrying, I would become glib, arrogant and offensive.				
63) Worrying helps me to plan the future more effectively.				
64) I would be a stronger person if I could worry less.				
65) It would be stupid and complacent not to worry.				

APPENDIX 4

Thought Control Questionnaire (TCQ)

&

List of Subscale Items

Below are a number of things people do to try and control their thoughts. Please read each statement carefully, and indicate how often you use each technique by ticking the appropriate box. Remember to think about the strategies and techniques you use in response to **thoughts, images and worries about your appearance**. There are no right or wrong answers. Do not spend too much time thinking about each one.

When I experience thoughts, images or worries about my appearance....

	Never	**Sometimes**	**Often**	***Almost* always**
1) I call to mind positive images instead				
2) I tell myself not to be so stupid				
3) I focus on the thought				
4) I replace the thought with a more trivial bad thought				
5) I don't talk about the thought to anyone				
6) I punish myself for thinking the thought				
7) I dwell on other worries				
8) I keep the thoughts to myself				
9) I occupy myself with work instead				
10) I challenge the thought's validity				
11) I get angry at myself for having the thought				
12) I avoid discussing the thoughts				
13) I shout at myself for having the thoughts				
14) I analyse the thought rationally				
15) I slap or pinch myself to stop myself having the thought				
16) I think pleasant thoughts instead				
17) I find out how my friends deal with these thoughts				
18) I worry about more minor things instead				
19) I do something that I enjoy				
20) I try to reinterpret the thought				
21) I think about something else				
22) I think more about the minor problems I have				
23) I try a different way of thinking about it				
24) I think about past worries instead				
25) I ask my friends if they have similar thoughts				
26) I focus on different negative thoughts				
27) I question the reasons for having the thoughts				
28) I tell myself that something bad will happen if I think the thought				
29) I talk to a friend about the thought				
30) I keep myself busy				

Distraction subscale: Items 1, 9, 16, 19, 21, 30
Punishment subscale: Items 2, 6, 11, 13, 15, 28
Reappraisal subscale: Items 3, 10, 14, 20, 23, 27
Worry subscale: Items 4, 7, 18, 22, 24, 26
Social control subscale: Items 5, 8, 12, 17, 25, 29

APPENDIX 5

Interview Schedule (abbreviated version)

Semi-structured interview (abbreviated version)

It seems from the questionnaire you completed that you like your _____ *(insert feature identified in BDDQ-R (= A))* least, because you feel it is _____ *(insert aspect of A that participant identified in BDDQ-R (= B))*.

When people are worrying, preoccupied or thinking a lot about something, a mixture of thoughts and images often goes through their mind. Thoughts are usually made up of words, but images can be pictures, sounds or sensations. I am interested in thoughts and images you have which relate either to your _____ *(A)* specifically or to your appearance in general. Many people find such images and thoughts strange or odd, so please try not to feel embarrassed if this is the case for you.

I will ask you first for information about the thoughts and images you have about your _____ *(A)* and your appearance in general. Then I will ask you some questions about the extent to which you are troubled by those thoughts and images and also about how those thoughts and images cause you to think, feel and behave.

Do you have any questions about what I am suggesting?

Do you have any concerns before we begin?

Section 1: Content of thoughts and images

I would like you to think about some of the times when you were worrying or preoccupied with your appearance in general or your _____ *(A)* specifically. When I use the word 'preoccupied', I mean 'thinking a lot about something'.

1.1) Can you think of any such times? Yes No

1.2) Have you ever experienced any thoughts and images that have popped into your mind when you were worrying or preoccupied with your appearance or your _____ *(A)?*

Yes No

If yes: Can you tell me a little about these images and thoughts?

If no: Let's try and think back to a specific time you were worrying or preoccupied with your appearance in general or your _____ *(A)*. Try to choose a typical time.
Prompts to be used as necessary:

What was going through your mind when you were worrying about your appearance?
What were you thinking about when you were worrying about your appearance?
Did you have any pictures in your mind when you were worrying about your appearance?
Did you notice any unusual sensations inside or on your body when you were worrying about your appearance?

Continue to ask the participant 'Do you experience any other thoughts and images when you are worrying or preoccupied with your appearance or _____ *(A)*?' *until the participant says that there are no more.*

1.3) Now I would like to ask you about some other kinds of thoughts that people have reported experiencing when they worry or are preoccupied with their appearance.

i) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, how often do you criticise or attack yourself?

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those self-critical thoughts?

ii) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, how often do you think about an embarrassing or humiliating experience in the past and/or what you could have done differently?

(Prompts: How often do you think 'I should have done....' or ask yourself 'Why did.... happen?')

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those thoughts?

iii) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, how often do you think about what other people might think about your appearance / (*A*)?

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those thoughts about what other people might think?

iv) think about potential situations in the future or ask yourself 'What if....happens?'

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those thoughts about potential situations in the future?

v) compare the image you have in your mind of the way you look now to the way other people look, the way you used to look or how you would like to look?

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those comparing thoughts?

vi) think about or plan ways you could change the way you look?

0 never	1 sometimes	2 half the time	3 most of the time	4 all of the time

If 1-4: Can you tell me a little about those thoughts about changing the way you look?

Section 2: Associated negative affect and impact on functioning

2.1) Associated negative affect

2.1.1) How sad or unhappy do you feel when these images and thoughts are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.1.2) How worried do you feel when these thoughts and images are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.1.3) How guilty do you feel when these thoughts and images are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.1.4) How angry do you feel when these thoughts and images are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.1.5) How afraid do you feel when these images are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.1.6) How ashamed do you feel when these images are on your mind?

0 not at all	1 mild	2 moderate	3 severe	4 extreme

2.2: Impact on functioning

Now we are going to talk about the effect of these thoughts and images on how you function.

2.2.1) To what extent does the presence of these thoughts and images about your appearance or _____ *(A)* interfere with your family life?

0 no interference	1 mild, slight interference	2 moderate, definite interference, but still manageable	3 severe, causes substantial impairment	4 extreme, incapacitating

2.2.2) To what extent does the presence of these thoughts and images about your appearance or _____ *(A)* interfere with school or work?

0 no interference	1 mild, slight interference	2 moderate, definite interference, but still manageable	3 severe, causes substantial impairment	4 extreme, incapacitating

2.3.3) To what extent does the presence of these thoughts and images about your appearance or _____ *(A)* interfere with intimate relationships?

0 no interference	1 mild, slight interference	2 moderate, definite interference, but still manageable	3 severe, causes substantial impairment	4 extreme, incapacitating

2.3.4) To what extent does the presence of these thoughts and images about your appearance or _____ *(A)* interfere with your social life and leisure activities?

0 no interference	1 mild, slight interference	2 moderate, definite interference, but still manageable	3 severe, causes substantial impairment	4 extreme, incapacitating

Section 3: Meta-cognitive beliefs

3.1: Open questions

3.1.1) What are the advantages of being preoccupied with thoughts and images about your appearance or _____ *(A)*?

Prompts: What do you gain by being preoccupied?

3.1.2) What are the disadvantages of being preoccupied with thoughts and images about your appearance or _____ *(A)*?

Prompts: What do you miss out on/lose because of being preoccupied?

3.1.3) Do you imagine anything bad would happen if you gave up being preoccupied by your appearance or _____ *(A)*?

3.1.4) Do you imagine anything bad would happen if you were to let yourself remain preoccupied by your appearance or _____ *(A)* or were unable to control the preoccupation?

3.2: Meta-Cognitions Questionnaire (Cartwright-Hatton & Wells, 1997)

Now I would like you to fill in a questionnaire. It contains statements that other people have given when asked about why they remain preoccupied with particular thoughts and images.

Remember to answer the questions with regard to your **thoughts and images about your appearance or your _____ *(A)* only**, and not with regard to thoughts and images you might experience about other things. When the word 'worry' is used, this means worrying or dwelling on thoughts and images about your appearance only and not general worry about other issues.

Section 4: Thought control strategies

People who experience thoughts and images like those you have described often report that they use a wide range of strategies to try to cope with those thoughts and images. These strategies might be physical, for example engaging in a distracting activity, or they might involve doing something in one's mind, like trying to think about something else. These strategies may or may not be helpful or they may be more or less helpful at different times and in different situations. I am interested in finding out about all the different mental strategies you use to try and cope with your thoughts and images, not just the ones that are helpful. Is that ok?

4.1: Open question

4.1.1) Sometimes people mentally do things in response to their worries, thoughts and images about their appearance. Do you mentally do things to deal with your thoughts about your appearance or _____ *(A)*?

If yes: Can you tell me about the things you do mentally?

If no: Let's try and think back to the last time you were worried about you appearance and you experienced thoughts and images, like _____ *(use example from earlier in the interview)*. What was the first thought or image you had? What did you do next? And then?

Continue to ask participant whether there are any other mental strategies he/she uses to try to cope with thoughts and images regarding appearance until the participant says there are no more.

4.2) Predetermined strategies

Now I would like to ask you about some other strategies that people use to try to control their thoughts and images about their appearance.

4.2.1) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, and are trying to control your thoughts and images how often do you perform a kind of mental cosmetic surgery on the image you have of the way you look? *(Explain that this involves altering the image one has of oneself in one's mind to make it more like how one would like to look)*

Never	Sometimes	Often	Almost always

4.2.2) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, and are trying to control your thoughts and images how often do you review evidence, for example trying to remember reactions from other people?

Never	Sometimes	Often	Almost always

4.2.3) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, and are trying to control your thoughts and images, how often do you plan for the future, for example planning where you will stand in a particular room?

Never	Sometimes	Often	Almost always

4.2.4) When you are worrying about or preoccupied with _____ *(A)* or your appearance in general, and are trying to control your thoughts and images how often do you talk to other people about other things in order to distract yourself?

Never	Sometimes	Often	Almost always

4.3: Thought Control Questionnaire (Wells & Matthews, 1994)

Now I would like you to complete a questionnaire about strategies and techniques people use to try and control unwanted and/or unpleasant thoughts. I am interested in the techniques you use to try to control thoughts, images and worries about your appearance or _____ *(A)*.

Remember to answer the questions with regard to strategies you use in response to your **thoughts and images about your appearance or your _____ *(A)* only**, and not for thoughts and images you might experience about other things.

Administer Thought Control Questionnaire

4.4: Effectiveness of strategies

So, it seems there are a number of things you do mentally to deal with your thoughts, images and worries about your appearance

Identify most frequently used avoidance strategy (=B)

Identify most frequently used engagement strategy (=C)

4.4.1) Most frequently used avoidance/suppression strategy

4.4.1.i) How effective is _____ *(B)* at reducing how often your thoughts, worries or images about your appearance or _____ *(A)* pop into your head?

0 **not at all effective**	**1** **slightly effective**	**2** **moderately effective**	**3** **very effective**	**4** **extremely effective**

4.4.1.ii) How effective is _____ *(B)* at reducing the intensity of your thoughts about your appearance or _____ *(A)*?

0 **not at all effective**	**1** **slightly effective**	**2** **moderately effective**	**3** **very effective**	**4** **extremely effective**

4.4.1.ii) How effective is _____ *(B)* at reducing the distress associated with your thoughts about your appearance or _____ *(A)*?

0 **not at all effective**	**1** **slightly effective**	**2** **moderately effective**	**3** **very effective**	**4** **extremely effective**

4.4.2: Most frequently used engagement strategy

4.4.2.i) How effective is _____ *(C)* at reducing how often your thoughts, worries or images about your appearance or _____ *(A)* pop into your head?

0 not at all effective	1 slightly effective	2 moderately effective	3 very effective	4 extremely effective

4.4.2.ii) How effective is _____ *(C)* at reducing the intensity of your thoughts about your appearance or _____ *(A)*?

0 not at all effective	1 slightly effective	2 moderately effective	3 very effective	4 extremely effective

4.4.2.iii) How effective is _____ *(C)* at reducing the distress associated with your thoughts about your appearance or _____ *(A)*?

0 not at all effective	1 slightly effective	2 moderately effective	3 very effective	4 extremely effective

Section 5: Interview Debrief

5.1) Is there anything else you would like to add?

5.2) Are there any comments you would like to make about the interview?

5.3) Do you have any further questions about this research?

Thank you for taking part.

APPENDIX 6

Engagement and avoidance strategies

Engagement Strategies

Mental cosmetic surgery; reviewing evidence; planning for the future (e.g. where to stand in a room to get least light on feature); try a different way of thinking about it; reinterpret the thought; question the reasons for having the thought; challenge the thought's validity; seeking reassurance from others about appearance; convincing self appearance is unimportant; rationalize thoughts; ask others if they have similar thoughts; tell self other people are worse off; focus on the thought; find out how my friends deal with these thoughts; try to reinterpret the thoughts; I talk to a friend about the thought.

Avoidance Strategies

Talk to other people about non-appearance topics; think about something else; call to mind positive images instead; replace the thought with a more trivial bad thought; dwell on other worries; occupy myself with work instead; think pleasant thoughts instead; worry about more minor things instead; think about something else; think about the minor problems I have; think about past worries instead; focus on different negative thoughts.

APPENDIX 7

Letters giving ethical approval

THE
PRIORY
HOSPITAL
NORTH LONDON

15 July 2004

Dr David Veale
Priory Hospital North London

Dear David,

Re: Preoccupation in Body Dysmorphic Disorder: a Systematic Description
Amaryllis Holland & David Veale

I have reviewed the above protocol and ethical approval from Camden & Islington Ethics Committee and BE & H LREC. I am happy for the study to proceed.

Yours sincerely

Medical Director

THE PRIORY HOSPITAL N
GROVELANDS HOU
SOUTHGATE, LC
TEL
email:

Barnet, Enfield & Haringey Local
Research Ethics Committee

02 July 2004

Ms Amaryllis Holland
Trainee Clinical Psychologist
Sub-department of Clinical Health
Psychology, UCL

Dear Ms Holland,

Full title of study: Preoccupation in Body Dysmorphic Disorder. A systematic Description
REC reference number: 04/Q0509/8

Thank you for your letter of 02 July 2004, responding to the Committee's request for further information on the above research.

The further information has been considered on behalf of the Committee by the Chairman

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation.

The favourable opinion applies to the following research site:

Site: Priory Hospital, North London
Principal Investigator: Ms Amaryllis Holland

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

- Application Form: dated 13.04.04
- Investigator CV: Dated: 08/04/2004
- Protocol :version 1 dated February 2004
- Peer Review: dated: 04/04/2004
- Details of DMC: dated: 13/04/2004

- Interview Schedules/Topic Guides: version: 3.1 Jan 5th 1993
- Copy of Questionnaire: version: 1 dated: 13/04/2004
- Copy of Advertisements: version 2 dated: 16/06/04
- Participant consent form dated 13/04/04
- Volunteer letter (control group) Version 2 dated 16/06/04
- Volunteer letter (BDD group) version 2 dated 16/06/04

Management approval

The study may not commence until final management approval has been confirmed by the organisation hosting the research.

All researchers and research collaborators who will be participating in the research must obtain management approval from the relevant host organisation before commencing any research procedures. Where a substantive contract is not held with the host organisation, it may be necessary for an honorary contract to be issued before approval for the research can be given.

Notification of other bodies

We shall notify the research sponsor, Priory Hospital, North London that the study has a favourable ethical opinion.

Statement of compliance *(from 1 May 2004)*

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

REC reference number: 04/Q0509/8 **Please quote this number on all correspondence**

Yours sincerely,

Chairman

Enc: Standard approval conditions [SL-AC1 or SL-AC2]

APPENDIX 8

List of variables showing significant skewness and kurtosis

For the self-report questionnaires, all variables were found to be normally distributed, with the exception of BDI (control group, significantly positively skewed and significant kurtosis), HADS - depression scale (control group, significantly positively skewed and significant kurtosis), BSI (control group, significantly positively skewed and significant kurtosis) and MCQ - factor 2 (negative metacognitive beliefs regarding the danger and uncontrollability of worrying about appearance) (control group, significantly positively skewed and significant kurtosis, and BDD group, significantly negatively skewed).

With regard to interview variables, all variables were found to be normally distributed, except for frequency of critical/self-attacking thoughts (control group, significantly positively skewed, and BDD group, significantly negatively skewed and significant kurtosis), frequency of past-oriented thoughts (control group, significantly positively skewed and significant kurtosis), impact of thoughts on family life (control group, significantly positively skewed and significant kurtosis), impact of thoughts on school/work/study (control group, significantly positively skewed), impact of thoughts on intimate relationships (BDD group, significantly negatively skewed), level of sadness associated with preoccupation (BDD group, significantly negatively skewed and significant kurtosis), level of anxiety associated with preoccupation (BDD group, significantly negatively skewed and significant kurtosis), level of fear associated with preoccupation (control group, significantly positively skewed and significant kurtosis), level of shame (control group, significantly positively skewed), effect of engagement strategy on thought intensity (BDD group, significantly positively skewed), effect of engagement strategy on associated distress (control group, significant kurtosis).

APPENDIX 9

Participant Information Sheet

Sub-Department of Clinical Health Psychology

UCL

UNIVERSITY COLLEGE LONDON

PARTICIPANT INFORMATION SHEET

Study title:

Preoccupation in Body Dysmorphic Disorder. A Systematic Description

Investigator Details:

Amaryllis Holland
Trainee Clinical Psychologist
Sub-Department of Clinical Health Psychology
University College London

Telephone number:

Email:

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please contact me if there is anything that is not clear or if you would like further information. Take time to consider whether or not you wish to take part.

Thank you for reading this.

Body Dysmorphic Disorder (BDD) is defined as a preoccupation with appearance or a particular feature of appearance. This means that people with BDD often find themselves thinking about their appearance or feature for long periods of time. This can cause distress and make it difficult for people to function as they might like to. Researchers have been working to understand Body Dysmorphic Disorder and to design treatment programs. Little research has been done on the preoccupation, however; what

kinds of thoughts go through people's minds and why these thoughts keep on returning time and time again.

This study aims to explore and describe the preoccupation (thoughts) in BDD by comparing a group of people with BDD with a group of people who have 'normal concerns' about their appearance. This will further understanding of the disorder itself and also the mechanisms that might be keeping the preoccupation going.

It is hoped that a total of 26 people with BDD and 26 people with 'normal concerns' about appearance will take part in the study.

It is up to you to decide whether or not to take part. If you decide to take part, you are still free to withdraw at any time, without giving a reason. A decision to withdraw or not take part will not affect the standard of any care you receive.

If you do decide to take part, you will be required to complete a number of questionnaires and you may be asked attend an interview. The completion of the questionnaires will take approximately half an hour and the interview will last around one hour. The interview will focus on your concerns regarding your appearance. It is possible that you may find some questions distressing. You will be free to stop the interview at any time and/or withdraw from the study. If you agree to take part, you will be reimbursed for travel expenses and also be paid 6 pounds per hour for your time.

While there are no immediate benefits for those taking part, it is hoped that people with BDD will benefit in the longer term. The findings of this research will be shared with other researchers and people working with people with BDD. It is hoped that the results will improve our understanding of BDD and contribute to more effective treatments.

All information collected about you during the course of this study will be kept strictly confidential. Questionnaires and audiocassettes will be numerically coded and stored in a locked filing cabinet. Your personal details will be stored separately.

The results from this research will be published in journals and also presented at relevant conferences.

This research is being organized by Amaryllis Holland (Trainee Clinical Psychologist), Dr. David Veale (Consultant Psychiatrist) and Dr. Tony Roth (University College London Joint Course Director). If you have any comments regarding this research, please direct correspondence to Dr. David Veale, Consultant Psychiatrist, The Priory

The study has been reviewed by the University College London Sub-Department of Clinical Health Psychology Research Committee.

Thank you for reading this.

APPENDIX 10

Consent Form

Sub-Department of Clinical Health Psychology
UNIVERSITY COLLEGE LONDON

CONSENT FORM

Study title:

Preoccupation in Body Dysmorphic Disorder. A Systematic Description

Investigator Details:

Amaryllis Holland
Trainee Clinical Psychologist
Sub-Dept of Clinical Psychology
University College London

Telephone number:

Email:

Supervisor Details:

Dr. A. Roth
Joint Course Director
Sub-Dept of Clinical Psychology
University College London

Telephone number:

Email:

Please read the following questions and circle the appropriate responses:

1) Have you read the Participant Information Sheet?
Yes No

2) Have you been given contact details of someone you can approach if you have questions?
Yes No

3) If you have asked questions, have you been given satisfactory answers?
Yes No

4) Have you received sufficient information about the study?
Yes No

5) Do you understand that your participation is voluntary and that you are free to withdraw from the study without penalty at any stage?
Yes No

6) Do you agree with the publication of the results of this study in appropriate journals?
Yes No

Name of participant	Date	Signature
Name of researcher	Date	Signature